87- 4178

AQUIFERS IN CRETACEOUS ROCKS OF THE CENTRAL COASTAL PLAIN OF NORTH CAROLINA

U.S. GEOLOGICAL SURVEY

WATER-RESOURCES INVESTIGATIONS REPORT 87-4178

U.S. DEPARTMENT OF THE INTERIOR
March 3, 1849

Prepared in cooperation with the

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES
AND COMMUNITY DEVELOPMENT

GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
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TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENOIR WATER CORPORATION

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By M.D. Winner, Jr., and William L. Lyke

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NORTH LENOIR WATER CORPORATION

Raleigh, North Carolina

1989

DEPARTMENT OF THE INTERIOR

MANUEL LUJAN, JR., Secretary

U.S. GEOLOGICAL SURVEY

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CONVERSION FACTORS

The following report uses inch-pound units as the primary system of measurements and metric units for water chemistry measurements. Inch-pound units can be converted to metric units by multiplying by the factors given in the following list.

Inch-pound unit	Multiply by	To obtain metric unit
foot	.3048	meter
mile	1.609	kilometer
foot per mile	.1894	meter per kilometer
foot per year	.3048	meter per year

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)--a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called "Mean Sea Level Datum of 1929."

AQUIFERS IN CRETACEOUS ROCKS OF THE CENTRAL COASTAL PLAIN OF NORTH CAROLINA

By M.D. Winner, Jr., and William L. Lyke

ABSTRACT

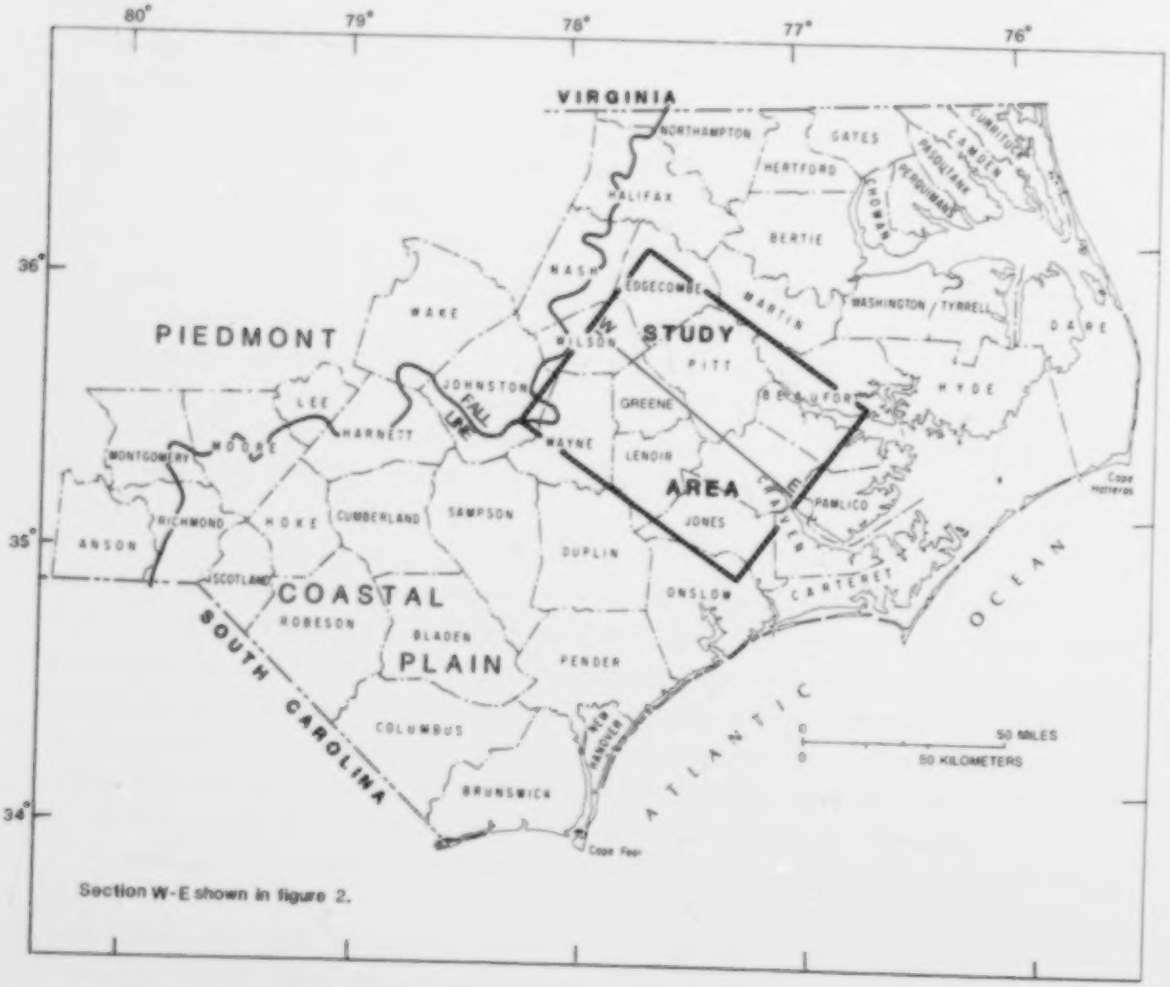
Aquifers in rocks of Cretaceous age are the major source of ground water for public supplies in the central Coastal Plain and consist of sand, gravel, and limestone beds of the Peedee, Black Creek, and the upper and lower Cape Fear aquifers, each separated by a confining unit composed of clay and silt beds. These aquifers and confining units (1) rest upon crystalline basement rocks, (2) dip and thicken to the east-southeast, and (3) are overlain by younger aquifers and confining units in deposits of Quaternary and Tertiary age composed of sand, clay, and limestone beds. The top of the uppermost aquifer in the Cretaceous rocks, the Peedee, ranges from 122 feet above to 595 feet below sea level. The maximum thickness of all aquifers and confining units in Cretaceous rocks is more than 1,600 feet. The position of the freshwater-saltwater interface within each of the Cretaceous aquifers is located generally farther toward the west with increasing depth.

Aquifers and confining units were defined and correlated for this report using 125 geophysical logs and accompanying drillers' logs, water-level data, and water-quality information regarding chloride concentrations in water. This analysis allowed the construction of seven hydrogeologic sections that depict the continuity of all the aquifers and confining units. These sections also show water levels and chloride concentrations in water from various test intervals and describe where chloride concentration in water exceeds 250 milligrams per liter (saltwater) within each aquifer.

Detailed maps of each aquifer show altitude of its top, thickness, areas of selected sand percentages, transition zones from fresh to saltwater, and the thickness of the confining unit. Hydrogeologic data for all aquifers and confining units are presented in tabular form.

INTRODUCTION

The central Coastal Plain aquifer study was begun in 1983 to better understand and define the ground-water flow system in the study area (fig. 1). The study area includes all of Greene and Pitt Counties and parts of Beaufort, Edgecombe, Craven, Jones, Lenoir, Wayne, and Wilson Counties.


80°
79°
78°
77°
76°
36°
35°
34°
VIRGINIA
NORTHAMPTON
GATES
CURRITUCK
CAMDEN
PASQUOTANK
PERQUIMANS
HERTFORD
CHOWAN
HALIFAX
BERTIE
NASH
EDGECOMBE
MARTIN
WASHINGTON
TYRRELL
DARE
WAKE
PIEDMONT
W
STUDY AREA
WILSON
PITT
JOHNSTON
FALL LINE
LEE
HARNETT
MOORE
MONTGOMERY
GREENE
BEAUFORT
HYDE
WAYNE
LENOIR
E
CRAVEN
PAMLICO
JONES
Cape Hatteras
ANSON
RICHMOND
HOKE
CUMBERLAND
SAMPSON
DUPLIN
SCOTLAND
COASTAL PLAIN
ROBESON
BLADEN
ONSLOW
CARTERET
SOUTH CAROLINA
PENDER
COLUMBUS
NEW HANOVER
BRUNSWICK
Cape Fear
ATLANTIC OCEAN
0 50 MILES
0 50 KILOMETERS

Section W-E shown in figure 2.

Figure 1.--Location of study area in the North Carolina Coastal Plain.

This report is based on the hydrogeologic framework for the entire Coastal Plain of North Carolina developed as part of the U.S. Geological Survey nationwide program for ground-water studies called Regional Aquifer Systems Analysis (RASA) (Winner and Coble, 1989). The RASA program included the development of the hydrogeologic framework that described the geology, hydrology, and geochemistry of a multi-layered aquifer system and the development of a digital flow model that simulates ground-water flow within the aquifer system.

Purpose and Scope

The purpose of this report is to delineate hydrogeologic units of the central Coastal Plain of North Carolina and describe the aquifers in rocks of Cretaceous age. These aquifers are the source of most of the ground water pumped in that area. This report expands upon the RASA work by including additional data within a smaller study area, which have been used to construct a more detailed hydrogeologic framework.

The hydrogeologic characteristics of the aquifers include lithology, altitude of top, thickness, percentage of permeable material, confining units, water levels, and chloride concentration in water. Cross sections, contour maps showing altitude top, thickness, and sand percentage of aquifers and confining units, and a data table showing this information are presented to define the physical dimensions of these hydrogeologic units and to provide a data base for future studies, including a model of the ground-water flow system of the area.

Acknowledgments

This report was prepared by the U.S. Geological Survey with the support of the North Carolina Department of Natural Resources and Community Development (NRCD) and other local agencies, including: Greene County, Town of Ayden, Town of Farmville, City of Kinston, Town of La Grange, City of New Bern, Town of Pinetops, Town of Snow Hill, Town of Stantonsburg, Greenville Utilities, and North Lenoir Water Corporation.

Pre-existing data used in this report were collected by a number of State, local, and Federal agencies. Much of the data were furnished by the Groundwater Section, Division of Environmental Management of the NRCD as part of their ongoing research station program. Data such as borehole geophysical logs and drillers' logs, drill-stem tests, and chemical analysis have been systematically collected at research-station sites since about

1966. NRCD drilled seven test holes in this study area and completed 14 observation wells. Carl Bailey of NRCD also participated in the log-correlation aspect of this study. Local agencies, as well as consulting companies, provided some well data for this study. Some borehole geophysical logs were furnished by the Geological Survey Section, Division of Land Resources, NRCD.

Previous Studies

Modern hydrogeologic studies (since the 1940's) in the central Coastal Plain area range from multi-county reconnaissances to detailed investigations of county and sub-county areas. A report by Brown and others (1972) included the central Coastal Plain area as part of a multi-state investigation of Coastal Plain sediments.

Hydrogeologic reports covering multi-county areas include those by Mundorff (1946), Billingsley and others (1957), Brown (1959), LeGrand (1960), Pusey (1960), and Narkunas (1980). County studies include those for Craven (Floyd, 1969, and Floyd and Long, 1970), Pitt (Sumsion, 1968 and 1970), and Wilson (Winner, 1976). Investigations of smaller areas include a report for the Kinston area by Nelson and Barksdale (1965), one for the Creeping Swamp basin area (Winner and Simmons, 1977), and two reports on the Chicod Creek basin in Pitt County (Simmons and Aldridge, 1980, and Watkins and Simmons, 1984).

Reports resulting from this current investigation of the central Coastal Plain include an altitude map of the basement surface (Lyke and Winner, 1986), which is the lower boundary of the hydrogeologic system, and a report of the historical ground-water pumpage from the aquifers in Cretaceous rocks and its relationship to an overall water-level decline in these aquifers from 1900 to 1980 (Winner and Lyke, 1986).

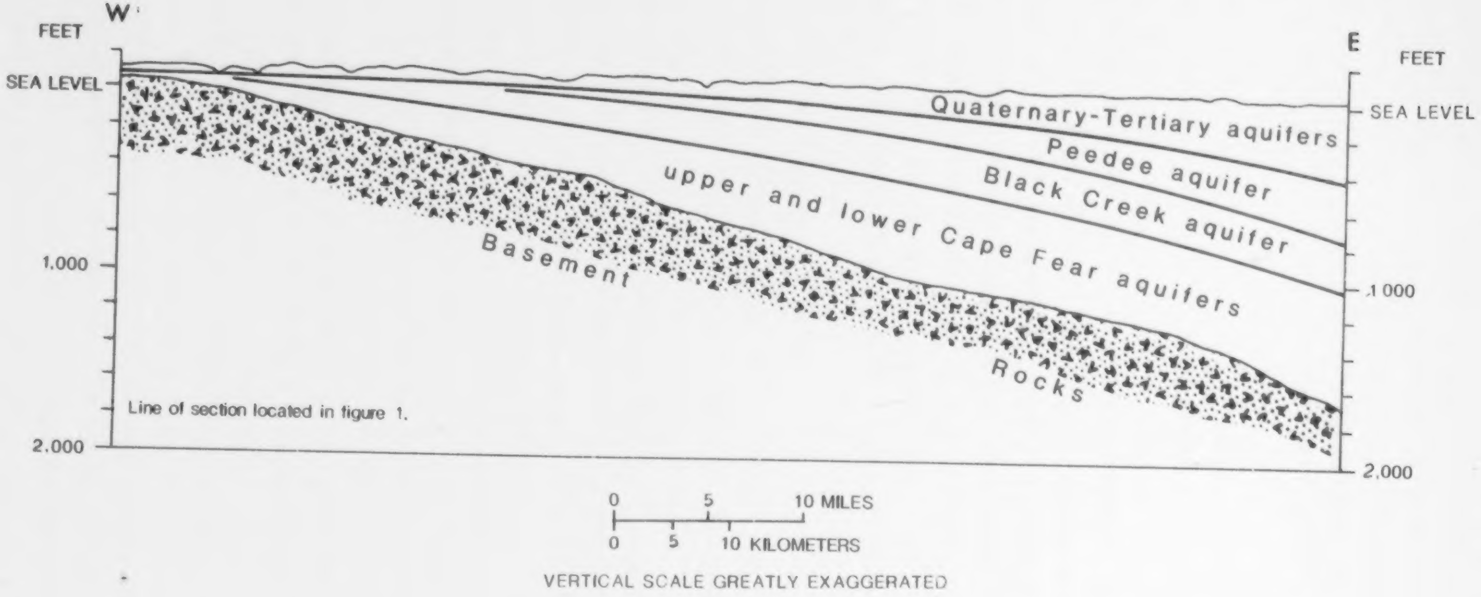
DELINEATION OF HYDROGEOLOGIC UNITS

Criteria generally used to map geologic formations are the lithologic properties or paleontologic content of the rocks. Hydraulic properties of rocks such as porosity, hydraulic conductivity, or storage coefficients are not used to define geologic units. Aquifer definition depends upon the mapping of hydraulically connected permeable units; and, although aquifer boundaries may coincide with or parallel those of chronologic or lithologic units in local areas, they are not usually everywhere constrained within these limits. This is especially true in the unconsolidated central Coastal Plain deposits.

For the purpose of developing a hydrogeologic description of the aquifer system capable of being used to define the movement of ground water throughout the central Coastal Plain, we are adopting a concept of hydrogeologic units similar to the term "hydrostratigraphic unit" proposed by Maxey (1964) to describe, "...bodies of rock with considerable lateral extent that compose a geologic framework for a reasonably distinct hydrologic system." This is to say the North Carolina central Coastal Plain sediments are organized into a system that meets both geologic and hydrologic criteria. The hydrogeologic system used within this report is similar to that identified in the North Carolina RASA program (Winner and Coble, 1989).

The unconsolidated aquifer system of the central Coastal Plain (fig.2) is made up of a number of imperfectly connected sand bodies, any one of which may have only local extent and, for short periods of time, may act under stress as a distinct hydraulic unit. On a regional scale, however, these permeable beds can be grouped into major aquifer units based on: (1) significant differences in hydraulic head across confining units that separate aquifers, (2) evidence of wide-spread lateral transmission of drawdown effects, thus indicating lateral extent of permeability, and (3) water-quality similarities within an aquifer and differences in water quality between aquifers separated by confining units.

Confining units consist of individual beds or groups of beds of clay, silty clay, sandy clay, silt, and fine sand. A confining unit, by definition, occurs only where the underlying aquifer is present. When an aquifer pinches out, the confining unit merges with the underlying confining unit. Like the aquifers they overlie and underlie and thus confine, regional confining units are also imperfectly connected bodies. Some confining units can be traced long distances, although any given confining unit may not be stratigraphically equivalent everywhere. However, the important consideration is the demonstrated hydrologic effect of the confinement on the major aquifers as mentioned above.



W
E
FEET
SEA LEVEL
1,000
2,000
FEET
SEA LEVEL
1 000
2,000
Quaternary-Tertiary aquifers
Peedee aquifer
Black Creek aquifer
upper and lower Cape Fear aquifers
Basement
Rocks
Line of section located in figure 1.
0
5
10 MILES
0
5
10 KILOMETERS
VERTICAL SCALE GREATLY EXAGGERATED

Figure 2.--Eastward dipping unconsolidated aquifers which overlie basement rocks.

Over 150 geophysical logs were examined for their potential use in constructing hydrogeologic sections, which was the primary method used to compile and compare data and to trace the extent of the aquifers and confining beds throughout the central Coastal Plain. Data from 67 geophysical logs were used to construct hydrogeologic sections and an additional 58 logs were used as supplementary data. The remaining logs were either redundant or were too shallow to be useful. Locations of all wells are shown in plate 1, and a listing of altitudes, thicknesses, and percentages of permeable material for each aquifer and confining unit at each data site are given in table 3 at the end of this report.

The geophysical logs generated from the NRCD ground-water research station program were selected as the principal logs of each section because these test holes usually were drilled to basement, and, equally as important, the NRCD program also provided water-level and water-quality data throughout the geologic column at the research-station site. The hydrogeologic framework of the central Coastal Plain was developed through the following sets of data: (1) bore-hole geophysical logs, (2) water-level measurements in wells, (3) chemical analyses of water samples from wells, and (4) RASA framework for data outside the study area.

The delineation of the hydrogeologic units was mainly accomplished by means of well-to-well correlation of lithologic units through the use of standard single-point electric log (self-potential and resistance curves) and the natural gamma-ray radiation log. The method of correlation used was to superimpose logs from adjacent wells to determine from the response of the log traces the continuity of sediments from well to well. Chronostratigraphic units identified in Brown and others (1972) were used to guide correlations in the eastern part of the study area where well coverage was less dense (pl. 1).

The distribution of water levels in research station wells was compared with the geophysical log, and appropriate confining units were selected on the basis of this head distribution. Log-to-log correlations of the log traces to determine aquifer zones, plus analysis of hydraulic head at various depths in adjacent or nearby research-station wells along the sections, led to the definition of aquifers and confining units shown in plates 2-8. Any particular regional confining unit may not be part of the same stratigraphic unit everywhere because of lithofacies changes and erosional unconformities within the sedimentary rocks of the central Coastal Plain. Also, the degree of confinement afforded by a given confining unit is not assumed to be the same everywhere. Thus, in interpreting areal continuity, the primary factors considered were the persistence of similar head values throughout aquifer zones and head differences across confining units.

In conjunction with the analysis of water-level data, water-quality data were also used to help delineate the hydrogeologic units. The chloride ion was selected as the constituent for this purpose because it is conservative, common in Coastal Plain aquifers, and analyses for chloride are frequently performed on water samples. Data from water analyses for chloride concentration are presented on the sections (pls. 2-8).

Chloride distribution in Coastal Plain aquifers is gradational in nature with chloride concentrations generally increasing with depth and in the downdip (or seaward) direction. A chloride concentration in water greater than 250 milligrams per liter is used in this report as the limit of freshwater. This concentration has been described by the U.S. Environmental Protection Agency (1984) to define the secondary limit of chloride concentration for freshwater.

The boundary between freshwater and saltwater approaching seawater in composition is called the transition zone in this report. The zone, containing a gradational mix of freshwater and saltwater, extends both laterally and vertically within an aquifer. The contact between freshwater and water of the transition zone is an imaginary plane defined by 250 milligrams per liter chloride ion concentration in water; in cross section the plane is depicted as an upward concave line. On maps the plane is shown as two lines, one where it intersects the bottom of the aquifer and one where it intersects the top of the aquifer. Variable geographic distributions of these planes within and among hydrogeologic units is directly related to lateral ground-water flow in aquifers and vertical flow across confining units.

AQUIFERS OF THE CENTRAL COASTAL PLAIN

The North Carolina Coastal Plain aquifer system is composed of permeable sand or limestone beds intermixed with clay or silt beds. The aquifers are distinguished from one another on the basis of geophysical log correlations and water-level and water-quality differences caused by the effect of areally extensive clay and silt confining units which separate the aquifers. These aquifers are generally characterized as: (1) overlying crystalline basement rocks; (2) having a dip to the east-southeast; (3) having a general thickening of beds toward the east; and (4) having an increase in the number of individual beds toward the east. The configuration and correlation of the Coastal Plain aquifers as they occur in the study area are shown in plates 2-8. Based on the aquifers identified for the North Carolina RASA study, the central Coastal Plain hydrogeologic units and their approximate geologic-age relationships are shown in table 1.

Table 1.--*Identification of central Coastal Plain hydrogeologic units*

System	Series	Central Coastal Plain hydrogeologic units
Quaternary	Post-Pliocene	Surficial aquifer
Tertiary	Pliocene and Miocene	Yorktown confining unit Yorktown aquifer
	Miocene	Pungo River confining unit Pungo River aquifer
	Oligocene and Eocene	Castle Hayne confining unit Castle Hayne aquifer
	Paleocene	Beaufort confining unit Beaufort aquifer
Cretaceous	Upper Cretaceous	Peedee confining unit Peedee aquifer
		Black Creek confining unit Black Creek aquifer
		Upper Cape Fear confining unit Upper Cape Fear aquifer
		Lower Cape Fear confining unit Lower Cape Fear aquifer
	Lower Cretaceous	Not present

For purposes of this report, these aquifers in Quaternary, Tertiary, and Cretaceous sediments are divided for convenience into two groups, herein referred to as: (1) the Quaternary-Tertiary aquifers and (2) the Cretaceous aquifers (fig. 2). Quaternary-Tertiary aquifers occur throughout the central Coastal Plain, overlie the Cretaceous aquifers, and are composed of sand, clayey sand, clay, and limestone beds. From top to bottom these aquifers are the surficial aquifer, the Yorktown aquifer, the Pungo River aquifer, the Castle Hayne aquifer, and the Beaufort aquifer. Each has been defined as having distinctive hydrogeologic characteristics that extend over large areas of the North Carolina Coastal Plain (Winner and Coble, 1989). Each aquifer is also separated from the next by a confining unit composed of less permeable clay and silt beds that are included as part of the definition of the aquifers. The most water productive of these aquifers is the Castle Hayne (Winner and Lyke, 1986), which is composed largely of limestone.

As a group, the Quaternary-Tertiary aquifers dip and thicken to the east, becoming more than 500 feet thick in the Beaufort County part of the study area (fig. 3). Along the western study area, they are generally less than 50 feet thick. The percentage of permeable material composing each aquifer varies widely from 15 to over 90 percent, but as a whole the Quaternary-Tertiary aquifers contain an average of 75 percent permeable material in the central Coastal Plain.

The Cretaceous aquifers are those from which the largest volume of water is pumped for public supply in the study area (Winner and Lyke, 1986) and on which emphasis of this report is placed. The Cretaceous aquifers underlie the Quaternary-Tertiary aquifers and overlie basement rocks (fig. 2) and occur throughout the study area. As defined in the RASA work (Winner and Coble, 1989), these aquifers are the Peedee aquifer, the Black Creek aquifer, and the upper and lower Cape Fear aquifers. The Lower Cretaceous aquifer does not occur in the study area.

The aquifers of the Cretaceous System are composed of sand, silty and clayey sand, clay, and minor beds of limestone and are separated by confining units of less permeable clay and silt beds. As a group the Cretaceous aquifers contain about 60 percent permeable material.

The Cretaceous aquifers dip and thicken eastward from less than 200 feet thick in Wayne, Wilson, and Edgecombe Counties to more than 1,600 feet

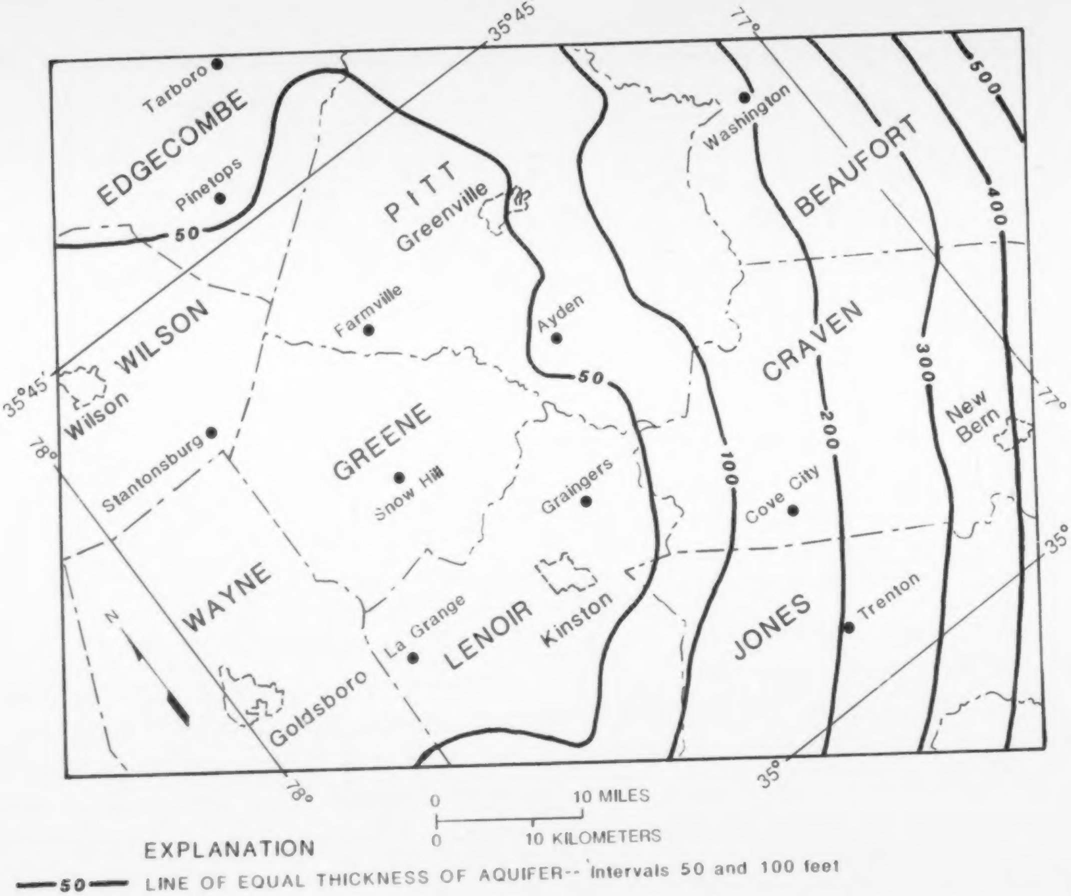
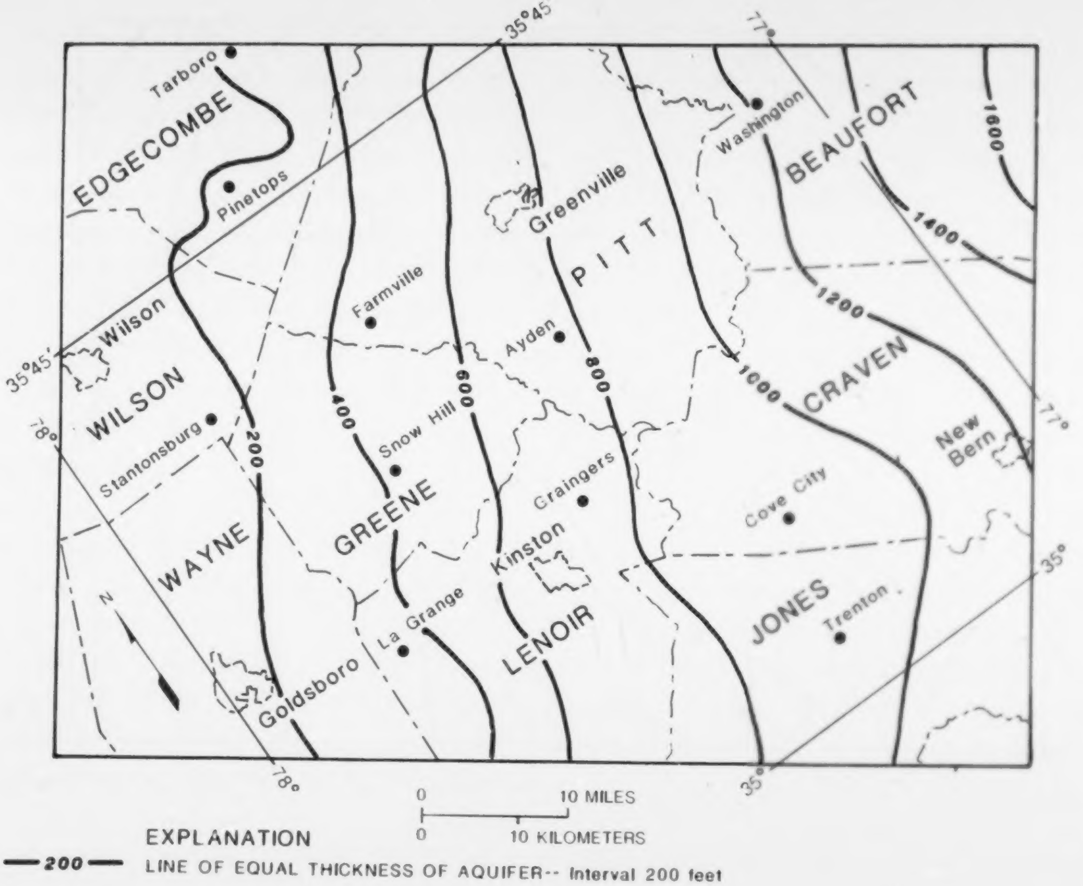

35°45'
77°
Tarboro
EDGECOMBE
Pinetops
50
PITT
Greenville
Washington
BEAUFORT
500
400
WILSON
Farmville
Ayden
CRAVEN
35°45'
Wilson
300
New Bern
77°
78°
Stantonsburg
GREENE
Snow Hill
Graingers
100
200
Cove City
35°
WAYNE
N
La Grange
LENOIR
Kinston
JONES
Trenton
Goldsboro
78°
35°
0
10 MILES
0
10 KILOMETERS
EXPLANATION
50 LINE OF EQUAL THICKNESS OF AQUIFER-- Intervals 50 and 100 feet

Figure 3.--Thickness of aquifers in Quaternary and Tertiary deposits in the central Coastal Plain.

thick in Beaufort County (fig. 4). The sedimentary volume of the Cretaceous aquifers is about five times that of the Quaternary-Tertiary aquifers in the study area. Table 2 summarizes the hydrogeologic properties of the Cretaceous aquifers and confining units as described in this report. A detailed description of each of the Cretaceous aquifers follows.

DESCRIPTION OF AQUIFERS IN CRETACEOUS ROCKS

The following descriptions of the Cretaceous aquifers of the central Coastal Plain are based on the RASA framework data and on data from 91 additional geophysical logs, wells, and test holes in the study area. Seven new test holes were drilled by the NRCD Groundwater Section for this investigation and were specifically designed to fill gaps in knowledge pointed out by the RASA study.


35°45'
77°
Tarboro
EDGECOMBE
Pinetops
Washington
BEAUFORT
1600
Greenville
1400
PITT
Farmville
1200
Wilson
35°45'
Ayden
WILSON
78°
600
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400
CRAVEN
Stantonsburg
200
Snow Hill
77°
New Bern
Graingers
GREENE
Cove City
WAYNE
Kinston
35°
N
La Grange
JONES
Trenton
LENOIR
Goldsboro
78°
35°
0
10 MILES
0
10 KILOMETERS
EXPLANATION
200
LINE OF EQUAL THICKNESS OF AQUIFER-- Interval 200 feet

Figure 4.--Thickness of aquifers in Cretaceous rocks in the central Coastal Plain.

Geologic and hydrologic descriptions for each aquifer are supplemented with maps of the altitude of the aquifer top, thickness, and areal distribution of permeable material. The confining unit that overlies each aquifer is similarly described and is named for the aquifer it overlies. Thus, the Peedee confining unit overlies the Peedee aquifer.

Chloride data were used to help delineate aquifers and to identify in each aquifer the presence of water containing more than 250 milligrams per liter chloride (saltwater), the generally accepted secondary upper limit for drinking water established by the U.S. Environmental Protection Agency (1984). On the hydrogeologic sections (pls. 2-8), lines are shown to represent an approximate updip limit of water containing 250 milligrams per liter chloride where present in each aquifer.

Table 2.--*Summary of properties for the Cretaceous aquifers and confining units*

Aquifer or confining unit	Altitude of top		Thickness			Average percent of permeable material	Aquifer extent in study area (percent)
	Highest observed (feet)	Lowest observed (feet)	Minimum observed (feet)	Maximum observed (feet)	Average (feet)		
Peedee confining unit	127	-561	5	74	26	16	--
Peedee aquifer	122	-595	6	280	94	66	59
Black Creek confining unit	100	-683	4	145	45	19	--
Black Creek aquifer	93	-749	12	355	193	49	82
Upper Cape Fear confining unit	97	-883	6	71	32	18	--
Upper Cape Fear aquifer	72	-928	8	252	146	60	100
Lower Cape Fear confining unit	-26	-1,078	7	66	34	15	--
Lower Cape Fear aquifer	-400	-1,144	19	324	125	59	62

The areal extent of the saltwater is also presented on maps of aquifer tops. Here, two chloride lines are shown. One represents the updip presence of saltwater at the bottom of the aquifer, the other its updip presence at the top of the aquifer, downdip of which the aquifer wholly contains water with chloride concentration greater than 250 milligrams per liter. The roughly parallel bands of chloride lines shown on maps represent that part of the transition zone from freshwater to saltwater.

Peedee Aquifer

The Peedee aquifer is the uppermost and youngest of the Cretaceous aquifers and is named for the Peedee Sand of Late Cretaceous age of Clark and others (1912) and the Peedee Formation of Stephenson and Rathbun (1923) of which the Peedee aquifer is largely composed. The Peedee aquifer may locally include sand units older or younger than the Peedee Formation because these sand units are hydraulically related to the aquifer. The Peedee aquifer is composed of fine- to medium-grained sands interbedded with gray to black marine clays and silts. The sand beds are commonly gray or greenish-gray and contain varying amounts of glauconite. Thin beds of partially consolidated calcareous sandstone and limestone are interlayered with sands in some places, and shells are common throughout the unit. The correlation of the Peedee aquifer in the central Coastal Plain is shown in the hydrogeologic sections (pls. 2-5, 7, and 8).

Areally, the Peedee aquifer underlies about 60 percent of the study area southeast of a line that runs northeast from La Grange, Lenoir County, to Greenville, Pitt County (pl. 9). The top of the aquifer dips toward the east-southeast at an average rate of about 15 feet per mile from an altitude of more than 100 feet above to about 600 feet below sea level (pl. 9).

From a single sand bed less than 10 feet thick along its western margin, the Peedee aquifer thickens eastward to about 300 feet near New Bern (pl. 10) where it is composed of several sand beds (pl. 5). The average thickness of the Peedee aquifer is 94 feet, based on observations from 79 well logs. From 75 observations, the Peedee contains about 66 percent permeable material. However, in a small band along its western margin, the sand content of the aquifer exceeds 75 percent and averages about 84 percent in this area (pl. 10).

The Peedee aquifer and its confining unit are overlain by the Quaternary-Tertiary aquifers and have some direct contact at one place or another with each of these except the Pungo River aquifer. The Peedee is underlain everywhere by the Black Creek confining unit and exchanges water with both the overlying and underlying units.

Ground-water recharge to the Peedee takes place through the several overlying Quaternary-Tertiary aquifers in the interstream areas throughout most of the study area. Discharge from the Peedee aquifer occurs through the Quaternary-Tertiary aquifers in stream valleys. In some places, streams have cut into the Peedee aquifer along its western margin where it is not deeply buried (pl. 9) so that discharge occurs directly from the Peedee into the streams. Areas where this occurs are along the Neuse River in the vicinity of Kinston, along Contentnea Creek near Hookerton, and east of Farmville along Little Contentnea Creek; there also may be some stream-aquifer connection along the Tar River at Greenville, as well as along some smaller, channelized streams.

Vertical ground-water leakage to the Quaternary-Tertiary aquifers also occurs where the Peedee is confined at depths greater than 200 to 300 feet. Evidence for this is seen in well 28 at Clarks (pl. 5) where the head in the upper part of the Peedee is about a foot higher than in the overlying Castle Hayne aquifer. It is believed that this type of discharge from the Peedee may have been more widespread in the time before large-scale pumping from all the Cretaceous aquifers began. Water-levels measured by Clark and others (1912) in the Peedee at Dover, Ayden, and Grimesland were higher than those reported for the aquifer in recent times.

Peedee Confining Unit

The Peedee confining unit overlies the Peedee aquifer and is composed of clay, silt, and sandy-clay beds. These strata are not correlated with a particular geologic unit, but they are composed of either the uppermost beds of the Peedee Formation, lowermost Quaternary or Tertiary sediments, or a combination of these. The chief hydrologic function of the confining unit is to regionally impede ground-water flow into or out of the Peedee aquifer from above as evidenced by interpretation of water levels and water-quality data. The correlation of the Peedee confining unit is shown in plates 2-5, 7, and 8.

The Peedee confining unit is shown in plate 11 as having an average thickness of about 26 feet, based on observations from 83 well logs. The unit is generally thinnest, less than 10 feet, along its western limit where the Peedee aquifer is also thin. The confining unit is also less than 10 feet thick in a few scattered areas in Craven and Jones Counties. In several areas of Craven, Jones, and Lenoir Counties, the unit is more than 50 feet thick.

Although the Peedee confining unit is composed of clay and silt beds, some thin sand beds of local extent are included in most places. The Peedee confining unit averages about 16 percent permeable material (81 data sites), and there are several places in the study area where the sand content is 20 percent or more (pl. 11). The largest of these occurs in Craven and Lenoir Counties. As the sand content of the confining unit increases, its capacity to confine the water in the Peedee aquifer is diminished and water may move through the confining unit more easily.

Freshwater-Saltwater Transition Zone

The freshwater-saltwater transition zone in the Peedee aquifer is delineated on several of the hydrogeologic sections (pls. 2, 3, 5, and 8).

As shown in plate 10, the zone is sinuous and trends northward from northeastern Jones County to eastern Beaufort County. It narrows slightly from a 4- to 7-mile width in the south to a 1- to 3-mile width in the north.

The highest measured chloride concentration in water from the Peedee aquifer was 920 milligrams per liter in well 28 at Clarks, Craven County (pl. 5). However, chloride values of several thousand milligrams per liter are projected in the Peedee aquifer east of the transition zone. In well 10 at Cox's Crossroads, Beaufort County (pl. 3), for example, water samples in aquifers above and below the Peedee aquifer showed chloride concentrations of 996 and 3,910 milligrams per liter, respectively. Chloride concentrations in the Peedee at this site could be expected to be some value between those two concentrations.

Black Creek Aquifer

The Black Creek aquifer is named for and consists largely of sediments of the Black Creek Formation as described by Clark and others (1912) from outcrops along the Tar River near Greenville (Pitt County) and elsewhere in the Coastal Plain. However, the aquifer may also include sand beds older or younger than the Black Creek Formation in local areas. As defined for the RASA study, the Black Creek aquifer also includes sediments of the underlying Middendorf Formation in the southern Coastal Plain area, but this formation has not been identified in the central Coastal Plain (Winner and Coble, 1989).

The sediments of the Black Creek aquifer are a fluvio-marine series consisting of thinly laminated gray clay interlayered with gray to tan sands, occurring in some outcrops as either sand-dominated or clay-dominated layers. Other outcrops show well-defined beds of clean sand and gray clay. A primary characteristic of Black Creek sediments, and one that is used to help identify it in the subsurface, is its high content of organic material, lignitized wood in particular. This high organic content causes the gray color of many of the sands and clays. Shells and glauconite are also common. Hydrogeologic sections show the correlation of the Black Creek aquifer in the study area (pls. 2-8).

The western margin of the Black Creek aquifer extends southwest from just east of Tarboro, Edgecombe County, to Goldsboro, Wayne County, where it turns to the west. The Black Creek underlies about 80 percent of the study area. The top of the aquifer dips toward the east-southeast from an altitude of nearly 100 feet above to more than 800 feet below sea level (pl. 12), and the rate of dip increases eastward from about 10 feet per mile to over 30 feet per mile.

Like the Peedee, the Black Creek aquifer consists of a single sand bed in a few places along its western margin, but it rapidly thickens eastward to include as many as six to eight sands each at least 10 feet thick. The maximum observed thickness of the Black Creek is 355 feet in well 49 near Trenton, Jones County (pl. 13). The average thickness of the Black Creek aquifer, based on observations from 73 well logs, is 193 feet.

The Black Creek has a high clay content and contains the least amount of sand of the Cretaceous aquifers, averaging slightly less than 50 percent of the total unit thickness, based on 72 observations. The Black Creek contains more than 50 percent sand in several areas along its western margin in central Pitt County, in the Greenville area, and in Lenoir County south and west of Kinston (pl. 13).

As mentioned previously, the Peedee aquifer overlies the Black Creek aquifer and its confining unit throughout most of the area except where the Black Creek extends west of the Peedee margin. Here, the Quaternary-Tertiary aquifers, the Yorktown and surficial aquifers, overlie the Black Creek. The upper Cape Fear confining unit underlies the Black Creek throughout the central Coastal Plain study area.

Recharge to the Black Creek aquifer is in interstream areas wherever heads are greater in overlying aquifers than in the Black Creek. Discharge from the Black Creek occurs in stream valleys where streams have cut into the Black Creek sediments (pl. 12). Here, ground water can move directly into the stream from the Black Creek aquifer.

Discharge from the Black Creek may also occur as a general upward leakage through its confining unit to the Peedee aquifer wherever confined heads in the Black Creek exceed those in the Peedee. In the time before ground-water pumpage from the Black Creek became areally extensive, this general upward leakage from the Black Creek is thought to have occurred everywhere east of a line roughly between Greenville, Pitt County, and La Grange, Lenoir County. Today, however, the decline in the water level throughout the Black Creek as a result of discharge from wells has now largely negated this natural upward discharge (Winner and Lyke, 1986). Only in Beaufort County are there recent indications that some potential still exists for upward leakage from the Black Creek (pls. 2 and 8).

Black Creek Confining Unit

The Black Creek aquifer is confined by a number of clay, silty-clay, and sandy-clay beds herein called the Black Creek confining unit. These are believed to belong mostly to the uppermost sediments of the Black Creek Formation. However, some beds that are included in the unit may be younger than the Black Creek Formation--that is, some Peedee or Quaternary and Tertiary clay beds. The continuity of the Black Creek confining unit is shown in sections (pls. 2-8). The Black Creek confining unit by definition occurs only where the Black Creek aquifer is present, but clay beds comprising this confining unit near the margin of the aquifer extend beyond the pinchout of the aquifer. They merge with other clay beds to form the confining unit of the underlying upper Cape Fear aquifer, which extends westward of the Black Creek margin.

The thickness of the Black Creek confining unit is shown in plate 14. In contrast to the nearly uniform thickness of the Peedee confining unit, the Black Creek confining unit thickens southeastward to over 100 feet. The maximum observed thickness is 145 feet in well 29 near River Bend in Craven County (pl. 14). The average thickness of the unit from 93 well logs was 45 feet.

The downdip thickening of the Black Creek confining unit incorporates some sand beds, generally of limited areal extent, that contribute to an average sand content of 19 percent for the unit, based on data from 101 observations. In a large area through the middle of the study area in Pitt, Greene, Lenoir, and Jones Counties, the sand content of the confining unit exceeds 20 percent (pl. 14).

Freshwater-Saltwater Transition Zone

The fresh- to saltwater transition zone in the Black Creek aquifer is interpreted from water-quality data and is shown in some of the hydrogeologic sections (pls. 2, 3, 5, and 8). This transition zone is also shown areally in plate 12 as a 3- to 8-mile wide band extending from the vicinity of Leggets Crossroads in Beaufort County to the Jones-Onslow County line along the White Oak River. East of this transition zone, the Black Creek aquifer contains water that is too salty for drinking. Chloride concentration in water samples collected from the Black Creek aquifer east of the transition zone ranges from 617 to 3,910 milligrams per liter (pls. 8 and 3, respectively).

The transition zone in the Black Creek aquifer generally parallels that in the overlying Peedee aquifer, but it is broader and lies slightly west of the transition zone in the Peedee aquifer. Further comparison of the two transition zones shows that a pocket of saltwater in the Peedee aquifer overlies freshwater-bearing sands in the upper part of the Black Creek aquifer in the vicinity of Clarks in Craven County. This interpretation is based on data from two test holes (wells 27 and 28, pl. 5) that show lower chloride values in the Black Creek aquifer. This situation is probably a local one in which a combination of aquifer transmissivity and confining-unit leakage factors has allowed the flushing of saltwater in the Black Creek to proceed here farther east than that in the Peedee.

Upper Cape Fear Aquifer

The separation of the Cape Fear Formation into two aquifer units in the North Carolina Coastal Plain was based on data from the RASA framework study. In the central Coastal Plain, this distinction is further supported by data from seven test holes that show significantly different heads across the confining unit between the upper and lower Cape Fear aquifers.

The upper Cape Fear aquifer comprises permeable zones in the upper part of the Cape Fear Formation (Sohl, 1976), which is identified on the State geological map (North Carolina Geological Survey, 1985) as occurring in the Tar and Neuse River valleys and along parts of Contentnea Creek. The Cape Fear Formation in the study area is composed largely of alternating beds of nonmarine sand and clay, commonly 3 to 5 feet thick but may range from less than a foot to over 40 feet in thickness. Some beds show vertical gradation from sand to clay and some beds carry conglomerates of quartz pebbles or mudstone fragments. Downdip, these nonmarine sediments are interbedded with some marine deposits interpreted on geophysical logs to be thin limestone beds.

The upper Cape Fear aquifer occurs throughout the central Coastal Plain as shown by the correlations in plates 2-8. The top of the aquifer ranges from a maximum observed 72 feet above sea level in Wilson County to an estimated 1,100 feet below sea level along the eastern boundary of the study area where it attains its greatest dip of about 37 feet per mile (pl. 15).

The top of the aquifer dips toward the east-southeast, but the unit thickens in a more easterly direction (pl. 16). Along the extreme western part of the study area, the upper Cape Fear is less than 50 feet thick and has been identified as being as little as 8 feet thick in well 125 at Black Creek in Wilson County (pl. 16). Although depicted as being study-wide in extent, there are small areas in the western part of the study area where the aquifer is missing due to non-deposition (for example, a quarry area east of Fountain, Pitt County), erosion, or predominance of clay facies in the Cape Fear Formation. The greatest thickness is estimated to be more than 500 feet near Bath in Beaufort County.

Over a broad area of the central Coastal Plain north of the Neuse River the aquifer is between 200 and 300 feet thick. South of there, the aquifer thins to less than 100 feet over much of Jones County and into Onslow County. Average thickness of the upper Cape Fear aquifer is about 147 feet from 38 well logs.

The sands that comprise the upper Cape Fear aquifer have diverse grain sizes ranging from very fine to coarse sand with some gravel, but the most common size as described by lithologic logs is medium or fine-to-medium sand. The average percentage of permeable material in the upper Cape Fear aquifer is 60 percent, from 36 observations. However, there are several areas where the sand percentage exceeds 60 percent. These are (1) along the western study area from Edgecombe to Wayne Counties where the unit is thin, (2) in southern Craven and Jones Counties where it is less than 200 feet thick, and (3) in a small area around Bethel in Pitt County. Few data are available to show areas where sand beds comprise less than 50 percent of the aquifer volume.

The upper Cape Fear aquifer and confining unit are overlain by the Black Creek aquifer east of a line extending from Tarboro, Edgecombe County, to Goldsboro, Wayne County. West of this line, the upper Cape Fear aquifer and confining unit are overlain by the Yorktown or surficial aquifers. The upper Cape Fear aquifer is underlain by the lower Cape Fear confining unit in the eastern two-thirds of the study area and by basement rocks or older clay beds in the western part. These older clays do not contain appreciable sand and exceed 100 feet in thickness in eastern Edgecombe County from Pinetops to Tarboro; they are shown as undifferentiated clays in plates 2, 3, 5, and 6.

Ground-water recharge to and discharge from the upper Cape Fear aquifer follows a pattern similar to that described for the Black Creek aquifer. In predevelopment times, there apparently was a natural, generally upward leakage of water from the upper Cape Fear through its confining unit and into the Black Creek aquifer throughout the eastern study area (Winner and Lyke, 1986). Today, however, pumping stresses in the upper Cape Fear have reduced the hydraulic head in the aquifer throughout most of the study area so that this natural leakage no longer takes place.

Upper Cape Fear Confining Unit

The upper Cape Fear confining unit is composed largely of clay and silt beds that overlie the upper Cape Fear aquifer. From test-hole data, these beds were identified as contributing to significant head or water-quality differences between overlying and underlying sand units and were correlated throughout the study area by means of geophysical logs (pls. 2-8). This confining unit, which contains thin sand lenses locally, may be composed of beds belonging to either the Black Creek or Cape Fear Formations or to the Yorktown Formation or surficial deposits where the Black Creek Formation is not present in the western part of the study area.

The overall thickness of the upper Cape Fear confining unit averages about 32 feet, based on 80 measured sections. The unit thickens slightly southeastward to over 50 feet in Jones County (pl. 17) where the maximum observed thickness is 71 feet in well 56 near the Jones-Onslow County boundary. The upper Cape Fear confining unit is less than 25 feet thick west of a line between Tarboro, Edgecombe County, to Goldsboro, Wayne

County, and in a large area in the central part of the area as shown in plate 17. Minimum measured thickness is 6 feet in well 123 at Stantonsburg, Wilson County.

Based on data from 80 well logs, the upper Cape Fear confining unit contains an average of 18 percent permeable material in the form of localized thin beds of fine sand. These sands may constitute as much as 32 percent of the confining unit. Those parts of the study area where the sand content of the upper Cape Fear confining unit exceeds 20 percent are shown in plate 17. In these areas, the confining unit is likely to be a less effective restraint to vertical ground-water flow than where it contains a greater percentage of clay. The principal area shown in plate 17 extends from southern Edgecombe County through most of Greene County to include eastern Wilson and Wayne Counties.

Freshwater-Saltwater Transition Zone

Saltwater is present in the upper Cape Fear aquifer east of a line between Bethel, Pitt County, and Comfort, Jones County, as indicated by the freshwater-saltwater transition zone shown in plate 15. This 3- to 8-mile wide zone has an easterly bulge in Pitt and Craven Counties that extends as far as the Cove City area in Craven County, but the zone as a whole lies west of the similar transition zone in the overlying Black Creek aquifer (pl. 12). Measured chloride values in water samples taken from various saltwater-bearing intervals in the upper Cape Fear aquifer range from 254 milligrams per liter (well 29, pl. 8) to 3,620 milligrams per liter (well 28, pls. 5 and 8).

Lower Cape Fear Aquifer

The lower Cape Fear aquifer is composed of the older sand beds of the Cape Fear Formation as described previously. These older sediments do not extend as far westward as do those that comprise the upper Cape Fear aquifer because they generally pinch out against the eastward-dipping basement surface. Hence, the lower Cape Fear aquifer occurs over about two-thirds of the study area east of a line between Bethel, Pitt County, and Deep Run, Lenoir County. However, the aquifer includes all of the sediments between its overlying confining unit and basement rocks. Correlations of this aquifer within the study area are shown in plates 2-5, 7, and 8.

The lower Cape Fear aquifer and its confining unit are entirely overlain by the upper Cape Fear aquifer. Water levels in the lower Cape Fear aquifer are everywhere higher than those in the upper Cape Fear aquifer. The head difference across the lower Cape Fear confining unit that separates the upper and lower Cape Fear aquifers averages 49 feet and ranges from 23 feet to 89 feet (pls. 3-5, 7, and 8). This reflects the areal effects of pumping stresses imposed on the upper Cape Fear aquifer; because there is no pumping from the lower aquifer, the hydraulic difference between the two aquifers has been increased.

The altitude of the top of the lower Cape Fear aquifer and the thickness of the unit are shown in plates 18 and 19, respectively. The top of the aquifer dips toward the east-southeast at an increasing rate from about 16 feet per mile at its western margin to over 50 feet per mile at the eastern boundary of the study area. The altitude of the top of the aquifer ranges from about 400 feet to about 1,800 feet below sea level.

The lower Cape Fear aquifer progressively thickens downdip from its western margin. In well 43 in Greene County, the unit is a series of thin sand beds totaling 19 feet thick; whereas north of the Pamlico River in Beaufort County, it is estimated to be 600 feet thick based on the altitude of basement surface (Lyke and Winner, 1986). The greatest observed thickness of the lower Cape Fear aquifer is 324 feet in well 105 at Chicod, Pitt County. The general eastward thickening trend of the aquifer is interrupted by a broad area in Jones and Craven Counties where the aquifer is consistently between 100 and 200 feet thick (pl. 19). The average thickness of the lower Cape Fear aquifer is 125 feet, based on data from 14 well logs.

The permeable beds comprising the lower Cape Fear aquifer are similar to those of the upper Cape Fear; that is, they range from very fine to coarse sand and include a few thin limestone beds from place to place. Interspersed with the sand and limestone are beds of clay and silt, some of which may be several tens of feet thick. The average sand content of the lower Cape Fear aquifer is about 59 percent, but this is based on data from only 12 wells that fully penetrate the aquifer. However, the distribution of these data suggests that the sand content exceeds 60 percent along the western margin of the aquifer northward from the vicinity of Maury, Greene

County, (pl. 19). Similarly, the sand content of the aquifer is believed to be less then 50 percent along the Jones-Craven County line between Dover and Clarks. The characteristics of the sands comprising the lower Cape Fear aquifer in northern Craven, eastern Pitt, and in Beaufort Counties are unknown.

Lower Cape Fear Confining Unit

The lower Cape Fear confining unit is composed of clay and silt beds of the Cape Fear Formation which are locally interbedded with beds of thin, fine sand. As mentioned previously, this unit is defined as separating the upper and lower Cape Fear aquifers on the basis of head differences between the aquifers and is correlated throughout the study area using geophysical log data (pls. 2-5, 7, and 8).

The confining unit thickens toward the east-southeast from a minimum of 7 feet in well 87 at Farmville, Pitt County, to a maximum of 66 feet in well 28 at Clarks, Craven County (pl. 20). Farther east, the unit is estimated to be more than 75 feet thick. Apart from the general eastward thickening trend, the only other feature suggested by the data is a localized thickening of the confining unit in Greene County, where it is more than 50 feet thick at Maury. The average thickness of the confining unit, based on 19 observations, is 34 feet.

Local sand beds included within the lower Cape Fear confining unit constitute as much as 34 percent of its total thickness in a few places, but on the average (19 values), the sand content is about 15 percent. The interpretation of geophysical data shows a sand content of the confining unit to exceed 20 percent in a band from Bethel, Pitt County, to Cove City in Craven County (pl. 20), but the eastward extent of this is unknown.

Freshwater-Saltwater Transition Zone

The lower Cape Fear aquifer contains saltwater throughout the study area except, possibly, for a narrow strip 2 to 8 miles wide along its western margin from the vicinity of Falkland, Pitt County, to Deep Run, Lenoir County. Here, the aquifer may contain freshwater based on estimations of the position of the transition zone from fresh- to saltwater in the aquifer (pls. 2-5 and 7). However, there have been no water samples taken to verify this possibility.

The areal extent of the transition zone is shown in plate 18 and is the westernmost of the four Cretaceous aquifers. The line of equal chloride concentration of 250 milligrams per liter in water at the bottom of the lower Cape Fear aquifer represents the eastern limit where all Coastal Plain aquifers in the study area contain freshwater.

Twelve samples of water have been collected from the lower Cape Fear aquifer. The lowest chloride concentration value was 260 milligrams per liter from well 63 in the transition zone near Graingers, Lenoir County, and the highest was 8,800 milligrams per liter from well 28 at Clarks in Craven County.

SUMMARY

The central Coastal Plain of North Carolina is underlain by an easterly-dipping and easterly-thickening wedge of sedimentary rocks ranging from post-Pliocene sand, limestone, silt, and clay deposits to Cretaceous deposits of similar composition. These sediments overlie crystalline basement rocks and reach a maximum thickness of more than 2,100 feet in the study area.

The stratigraphic continuity of these sediments was delineated by use of geophysical logs, 67 of which were used to construct seven interconnected hydrogeologic sections throughout the study area. Sediments were then grouped into aquifers and confining units according to lithologic similarities, evidence of head differences between layers, widespread effects of pumping, and water-quality differences.

For convenience in the report, the aquifers of the central Coastal Plain are classified as belonging to either Quaternary-Tertiary aquifers or to Cretaceous aquifers. The Quaternary-Tertiary aquifers overlie the Cretaceous aquifers, constitute the smaller volume of sediments in the study area (as much as 500 feet total thickness), and include the surficial aquifer, the Yorktown aquifer, the Pungo River aquifer, the Castle Hayne aquifer, and the Beaufort aquifer. The most water productive of these is the Castle Hayne aquifer, which is composed largely of limestone.

The Cretaceous beds, which make up about five times the sediment volume of the Quaternary and Tertiary beds, are the focus of this investigation and include the Peedee aquifer, the Black Creek aquifer, and the upper and lower Cape Fear aquifers. Most of the ground-water pumpage for public supplies and industries in the central Coastal Plain is from aquifers in the Cretaceous rocks, resulting in widespread water-level declines throughout the area. The location of the freshwater-saltwater transition zone within the Cretaceous aquifers, as a whole, generally moves westward with increasing depth.

Maps are presented to show for each Cretaceous aquifer the areal extent of the unit, the altitude of its top, its thickness, areas of selected sand percentages, and the transition zone from freshwater to saltwater in the aquifer. Confining units, which are primarily composed of clay and silt beds, separate the major aquifers and are also discussed. The thickness of each confining unit is shown on a map along with areas where the unit is comprised of more than 20 percent sand.

Hydrogeologic data are tabulated (table 3) for each of the 125 data sites shown in sections and maps. Altitude of the tops, thicknesses, and percent permeable material are listed for each aquifer and confining unit identified at a site.

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Table 3.--*Aquifer and confining unit data*

[**Well No**: NRCD well-numbering system. American Petroleum Institute (API) number given for oil-test well. **Map No**: Reference number for data in text, maps and cross sections, sequentially listed in this table. **Log Depth**: Depth of well log in feet below land surface. **Latitude** and **Longitude**: given in degrees, minutes and seconds. **Altitude of Land Surface**: Given in feet above sea level. **Basement**: Where known, altitude of top is in feet above or below sea level. **AQ**: Aquifer--**SUR**, surficial aquifer; **YKN**, Yorktown aquifer; **PGR**, Pungo River aquifer; **CLH**, Castle Hayne aquifer; **BFR**, Beaufort aquifer; **PD**, Peedee aquifer; **BC**, Black Creek aquifer; **UCF**, upper Cape Fear aquifer; **LCF**, lower Cape Fear aquifer. **CONF UNIT**: Confining unit separating aquifers. **ALT TOP**: Altitude of top of aquifer or confining unit in feet above or below sea level. **THICK**: Thickness of aquifer or confining unit in feet. **PCT PERM MATERIAL**: Percent of permeable material comprising aquifer or confining unit. Dashes indicate data were incomplete or values were not estimated; blank spaces indicate hydrogeologic units are not present or were not reached by test hole]

B E A U F O R T C O U N T Y

U.S. Information Agency. Well No: L21p1
Map No: **1** Log Depth 410 Latitude: 354152 Longitude: 770915 Altitude of Land Surface: 42 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	42	28	14			-14	-24	-46	-69	-108	-140	-176	-211				
THICK	14	14	28			10	22	23	39	32	36	35	--				
PCT PERM MATERIAL	43	<10	39			<10	86	13	64	<20	75	<10	--				

City of Washington Test. Well No: M20e5
Map No: **2** Log Depth 516 Latitude: 353914 Longitude: 770413 Altitude of Land Surface: 45 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	45	--	17			-9	-29	-115	-134	-145	-155	-265	-303				
THICK	--	--	26			20	86	19	11	10	110	38	--				
PCT PERM MATERIAL	--	--	15			<10	91	21	45	10	64	13	--				

Table 3.--*Aquifer and confining unit data*--Continued

City of Washington Test. Well No: M21q1
Map No: **3** Log Depth 730 Latitude: 353645 Longitude: 770816 Altitude of Land Surface: 15 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	15	--	--			--	-22	-32	-37	-71	-90	-188	-275	-507	-538		
THICK	--	--	--			--	10	5	34	19	98	87	232	31	--		
PCT PERM MATERIAL	--	--	--			--	>90	<10	47	16	51	<10	41	<10	--		

City of Washington. Well No: N20k4
Map No: **4** Log Depth 770 Latitude: 353320 Longitude: 770126 Altitude of Land Surface: 25 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	25	-5	-26			-56	-62	-165	-169	-187	-209	-322	-369	-597	-652		
THICK	30	21	30			6	103	4	18	22	113	47	228	55	--		
PCT PERM MATERIAL	>90	<10	>90			<10	92	<10	89	<10	57	21	44	16	--		

NRCD Chocowinity Research Station. Well No: N21v5
Map No: **5** Log Depth 458 Latitude: 353038 Longitude: 770601 Altitude of Land Surface: 33 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	33	21	13			-34	-55	-153	-166	-185	-214	-299	-344				
THICK	12	8	47			21	98	13	19	29	85	45	--				
PCT PERM MATERIAL	75	12	51			19	88	15	84	7	59	11	--				

Table 3.--*Aquifer and confining unit data*--Continued

NRCD Bath Research Station. Well No: O17i3
Map No: **6** Log Depth 702 Latitude: 352832 Longitude: 764701 Altitude of Land Surface: 6 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	6	-18	-32	-104	-121	-130	-138	-412	-428	-502	-516	-590	-636				
THICK	24	14	72	17	9	8	274	16	74	14	74	46	--				
PCT PERM MATERIAL	83	28	58	<10	>90	<10	89	<10	76	36	54	<10	--				

Gum Point Gun Club. Well No: O17u-
Map No: **7** Log Depth 195 Latitude: 352512 Longitude: 764531 Altitude of Land Surface: 1 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	1	-20	-26	-90	-107	-140	-157										
THICK	21	6	64	17	33	17	--										
PCT PERM MATERIAL	76	<10	69	12	82	<25	--										

NRCD Lee Creek Research Station. Well No: P17h4
Map No: **8** Log Depth 954 Latitude: 352311 Longitude: 764701 Altitude of Land Surface: 7 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	7	-22	-29	-66	-88	-137	-145	-489	-510	-561	-595	-683	-749				
THICK	29	7	37	22	49	8	344	21	51	34	88	66	--				
PCT PERM MATERIAL	>90	<10	75	<10	53	<10	80	<10	55	15	46	15	--				

Table 3.--*Aquifer and confining unit data*--Continued

NRCD Bonnerton Research Station. Well No: P18v4
Map No: **9** Log Depth 431 Latitude: 352047 Longitude: 775126 Altitude of Land Surface: 39 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	39	4	-11	-47	-72	-94	-105										
THICK	35	15	36	25	22	11	--										
PCT PERM MATERIAL	57	<10	75	12	50	18	--										

NRCD Cox's Crossroad Research Sta. Well No: P19m4
Map No: **10** Log Depth 800 Latitude: 352223 Longitude: 765704 Altitude of Land Surface: 27 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	27	-3	-15	-25	-29	-35	-45	-333	-351	-370	-403	-458	-500				
THICK	30	12	10	4	6	10	288	18	19	33	55	42	--				
PCT PERM MATERIAL	>90	<10	>90	<10	>90	<10	73	<20	79	15	64	<10	--				

NRCD Wilmar Research Station. Well No: P21k5
Map No: **11** Log Depth 918 Latitude: 352252 Longitude: 770507 Altitude of Land Surface: 43 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	43					18	-10	-183	-194	-217	-239	-335	-387	-666	-695		
THICK	25					28	173	11	23	22	96	52	279	29	--		
PCT PERM MATERIAL	60					<10	86	<10	87	14	62	19	47	21	--		

Table 3.--*Aquifer and confining unit data*--Continued

Henry S. Long. Well No: Q19b1
Map No: **12** Log Depth 118 Latitude: 351952 Longitude: 765611 Altitude of Land Surface: 33 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	33	-8	-18	-34	-41	-53	-57										
THICK	41	10	16	7	12	4	--										
PCT PERM MATERIAL	68	<10	>90	<10	>90	<10	--										

C R A V E N   C O U N T Y

USGS Wilmar Test. Well No: P22j1
Map No: **13** Log Depth 959 Latitude: 352314 Longitude: 771024 Altitude of Land Surface: 48 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	48	16	8			-4	-14	-98	-115	-126	-140	-220	-254	-568	-619	-836	-878
THICK	32	8	12			10	84	17	11	14	80	34	314	51	217	42	--
PCT PERM MATERIAL	75	<10	>90			<10	86	29	>90	<10	52	12	47	18	57	33	--

Town of Vanceboro. Well No: Q21g1
Map No: **14** Log Depth 305 Latitude: 351811 Longitude: 770846 Altitude of Land Surface: 16 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	16					-8	-18	-198	-219	-232	-262						
THICK	24					10	180	21	13	30	--						
PCT PERM MATERIAL	58					<10	89	<10	>90	20	--						

Gene Orman. Well No: Q24q1
Map No: **15** Log Depth 420 Latitude: 351710 Longitude: 772318 Altitude of Land Surface: 45 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	45					11	6	-11	-18	-36	-101	-230	-292				
THICK	34					5	17	7	18	65	129	62	--				
PCT PERM MATERIAL	50					<10	76	<10	>90	10	59	22	--				

H.L. White. Well No: Q25k1
Map No: **16** Log Depth 315 Latitude: 351758 Longitude: 772509 Altitude of Land Surface: 34 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	34					16	10	4	1	-23	-86	-214	-275				
THICK	18					6	6	3	24	63	128	61	--				
PCT PERM MATERIAL	83					<10	>90	<10	42	13	58	31	--				

Unknown. Well No: Q25t1
Map No: **17** Log Depth 304 Latitude: 351647 Longitude: 772536 Altitude of Land Surface: 40 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	40					18	15	2	-16	-39	-86	-192	-252				
THICK	22					3	13	18	23	47	106	60	--				
PCT PERM MATERIAL	64					<10	69	33	83	21	54	33	--				

Table 3.--*Aquifer and confining unit data*--Continued

USGS Rice Property Test. Well No: R21o1
Map No: **18** Log Depth 554 Latitude: 351239 Longitude: 770924 Altitude of Land Surface: 23 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	23					-3	-21	-197	-207	-241	-275	-433					
THICK	26					18	176	10	34	34	158	--					
PCT PERM MATERIAL	77					22	89	<10	62	26	56	--					

USGS Tuscarora Test. Well No: R23u2
Map No: **19** Log Depth 520 Latitude: 351033 Longitude: 771502 Altitude of Land Surface: 47 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	47					22	12	-128	-128	-161	-193	-390	-429				
THICK	25					10	140	0	33	32	197	39	--				
PCT PERM MATERIAL	50					<10	93	--	91	16	53	<10	--				

City of New Bern Cove City Test. Well No: R23w1
Map No: **20** Log Depth 884 Latitude: 351038 Longitude: 771752 Altitude of Land Surface: 34 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	34					--	--	--	-116	-128	-152	-338	-362	-715	-733		
THICK	--					--	--	--	12	24	186	24	353	18	--		
PCT PERM MATERIAL	--					--	--	--	>90	25	54	33	48	<10	--		

NRCD Cove City Research Station. Well No: R23x3(x)
Map No: **21** Log Depth 1,090 Latitude: 351019 Longitude: 771841 Altitude of Land Surface: 46 Basement:-1,043

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	46					38	26	-101	-104	-116	-144	-311	-338	-683	-717	-846	-880
THICK	8					12	127	3	12	28	167	27	345	34	129	34	163
PCT PERM MATERIAL	>90					<10	94	<10	>90	18	68	<20	46	18	68	24	49

Peter Havfich. Well No: R24n5
Map No: **22** Log Depth 1,195 Latitude: 351018 Longitude: 772332 Altitude of Land Surface: 60 Basement: -998

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	60					52	42			-44	-52	-221	-265	-612	-628	-788	-810
THICK	8					10	86			8	169	44	347	16	160	22	188
PCT PERM MATERIAL	>90					<10	95			<10	59	18	49	<10	67	<10	48

Town of Dover Test. Well No: R2513
Map No: **23** Log Depth 400 Latitude: 351255 Longitude: 772615 Altitude of Land Surface: 55 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	55					39	23			-5	-22	-212	-290				
THICK	16					16	28			17	190	78	--				
PCT PERM MATERIAL	>90					25	78			23	53	38	--				

Table 3.--*Aquifer and confining unit data*--Continued

City of New Bern Test No. 13. Well No: S20ol
Map No: **24** Log Depth 496 Latitude: 350730 Longitude: 770430 Altitude of Land Surface: 20 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	20					0	-32	-278	-298	-322	-358						
THICK	20					32	246	20	24	36	--						
PCT PERM MATERIAL	--					--	90	<10	>90	22	--						

USGS New Bern Properties Test. Well No: S21i-
Map No: **25** Log Depth 960 Latitude: 350815 Longitude: 770620 Altitude of Land Surface: 27 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	27					-1	-21	-265	-277	-313	-347	-627	-741				
THICK	28					20	244	12	36	34	280	114	--				
PCT PERM MATERIAL	82					25	87	<10	83	20	62	24	--				

USGS N.W. Fields Property Test. Well No: S21y-
Map No: **26** Log Depth 605 Latitude: 350544 Longitude: 770908 Altitude of Land Surface: 21 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	21					--	--	-232	-243	-294	-307	-559					
THICK	--					--	--	11	51	13	252	--					
PCT PERM MATERIAL	--					--	--	<10	76	31	52	--					

International Paper Company. Well No: S22d1
Map No: **27** Log Depth 832 Latitude: 350904 Longitude: 771306 Altitude of Land Surface: 38 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	38					--	18	-135	-146	-197	-202	-434	-497				
THICK	--					--	153	11	51	5	232	63	--				
PCT PERM MATERIAL	--					--	86	<10	65	<10	54	16	--				

NRCD Clarks Research Station. Well No: S22j6(a)
Map No: **28** Log Depth 1,286 Latitude: 350816 Longitude: 771018 Altitude of Land Surface: 28 Basement:-1,257

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	28					14	6	-214	-230	-259	-272	-504	-632	-830	-860	-1,078	-1,144
THICK	14					8	220	16	29	13	232	128	198	30	218	66	113
PCT PERM MATERIAL	71					<10	87	31	69	15	52	22	43	17	57	12	50

USGS Simmons Farm Test. Well No: T22a1
Map No: **29** Log Depth 1,000 Latitude: 350458 Longitude: 771049 Altitude of Land Surface: 34 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	34					14	3	-247	-268	-288	-302	-530	-675	-872	-924		
THICK	20					11	250	21	20	14	228	145	197	52	--		
PCT PERM MATERIAL	>90					<10	75	24	75	21	52	28	48	12	--		

Table 3.--*Aquifer and confining unit data*--Continued

EDGECOMBE COUNTY

Roberson School. Well No: J25k1
Map No: **30** Log Depth 160 Latitude: 355248 Longitude: 772518 Altitude of Land Surface: 79 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	79	58	39									6	-15	-73			
THICK	21	19	33									21	58	--			
PCT PERM MATERIAL	62	16	67									9	59	--			

City of Tarboro. Well No: J26h-
Map No: **31** Log Depth 349 Latitude: 355334 Longitude: 773218 Altitude of Land Surface: 50 Basement: -299

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	--	--	--											25	10	**	
THICK	--	--	--											15	159		
PCT PERM MATERIAL	--	--	--											--	--		

C.A. Powell. Well No: J28s-
Map No: **32** Log Depth 445 Latitude: 355115 Longitude: 774115 Altitude of Land Surface: 98 Basement: -148

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ-	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	98	86	74											60	37		
THICK	12	12	14											23	--		
PCT PERM MATERIAL	67	20	42											17	--		

** Thick clay beds occur between lowermost aquifer and basement rocks.

Joy Baptist Church. Well No: K25c2
Map No: **33** Log Depth 103 Latitude: 354919 Longitude: 772727 Altitude of Land Surface: 45 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	45	33	21									6	0				
THICK	12	12	15									6	--				
PCT PERM MATERIAL	75	<10	67									<10	--				

Town of Pinetops. Well No: K27r1
Map No: **34** Log Depth 308 Latitude: 354724 Longitude: 773822 Altitude of Land Surface: 104 Basement: -196

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	104	70	64											38	2	**	
THICK	34	6	26											36	100		
PCT PERM MATERIAL	44	<10	62											22	57		

Crisp Water Association. Well No: K27x1
Map No: **35** Log Depth 300 Latitude: 354550 Longitude: 773825 Altitude of Land Surface: 76 Basement: -190

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	76	42	34											26	-8	**	
THICK	34	8	8											34	78		
PCT PERM MATERIAL	50	<10	>90											20	73		

** Thick clay beds occur between lowermost aquifer and basement rocks.

Table 3.--*Aquifer and confining unit data*--Continued

Frank Eason. Well No: K28u-
Map No: **36** Log Depth 242 Latitude: 354503 Longitude: 774022 Altitude of Land Surface: 102 Basement: -140

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	102	80	68											64	30		
THICK	22	12	4											34	--		
PCT PERM MATERIAL	41	<10	<90											18	--		

Town of Macclesfield. Well No: K28v1
Map No: **37** Log Depth 294 Latitude: 354523 Longitude: 774122 Altitude of Land Surface: 95 Basement: -91

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	95	85	80											75	41	**	
THICK	10	5	5											34	98		
PCT PERM MATERIAL	--	--	--											<10	51		

GREENE COUNTY

Town of Walstonburg. Well No: M28w1
Map No: **38** Log Depth 399 Latitude: 353542 Longitude: 774212 Altitude of Land Surface: 119 Basement: -277

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	119	79	59									41	25	-3	-33	**	
THICK	40	20	18									16	28	30	233		
PCT PERM MATERIAL	45	20	78									6	61	<10	60		

** Thick clay beds occur between lowermost aquifer and basement rocks.

Maury Water Association. Well No: O26f1
Map No: **39** Log Depth 368 Latitude: 352857 Longitude: 773442 Altitude of Land Surface: 59 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	59									49	27	8	-15	-153	-192		
THICK	10									22	19	23	138	39	--		
PCT PERM MATERIAL	>90									18	63	17	41	15	--		

Ormondsville Water Corporation. Well No: O26g2
Map No: **40** Log Depth 400 Latitude: 352821 Longitude: 773306 Altitude of Land Surface: 72 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	72									32	14	-18	-34	-146	-202		
THICK	40									18	32	16	112	56	--		
PCT PERM MATERIAL	50									<10	66	25	46	12	--		

Greene County Water System. Well No: O26k1
Map No: **41** Log Depth 475 Latitude: 352702 Longitude: 773015 Altitude of Land Surface: 66 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	66									31	6	-34	-50	-280	-299		
THICK	35									25	40	16	230	19	--		
PCT PERM MATERIAL	50									16	52	12	43	21	--		

Table 3.--*Aquifer and confining unit data*--Continued

Maury Water Association. Well No: O27j1
Map No: **42** Log Depth 360 Latitude: 352842 Longitude: 773513 Altitude of Land Surface: 66 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	66									57	38	4	-22	-142	-199		
THICK	9									19	34	26	120	57	--		
PCT PERM MATERIAL	78									16	62	27	48	32	--		

NRCD Maury Research Station. Well No: O27j4
Map No: **43** Log Depth 568 Latitude: 352840 Longitude: 773555 Altitude of Land Surface: 78 Basement: -487

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	78									63	34	8	-14	-160	-202	-412	-468
THICK	15									29	26	22	146	42	210	56	19
PCT PERM MATERIAL	90									<10	73	27	48	26	57	21	63

Town of Snow Hill. Well No: O28t1
Map No: **44** Log Depth 391 Latitude: 352658 Longitude: 774051 Altitude of Land Surface: 84 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	84											52	28	-128	-164		
THICK	32											24	156	36	--		
PCT PERM MATERIAL	69											21	44	28	--		

Table 3.--*Aquifer and confining unit data*--Continued

Jason Water Corporation. Well No: O29r1
Map No: **45** Log Depth 320 Latitude: 352615 Longitude: 774730 Altitude of Land Surface: 126 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	126											90	80	-65	-120		
THICK	36											10	145	55	--		
PCT PERM MATERIAL	61											<10	48	19	--		

Town of Hookerton. Well No: P27a1
Map No: **46** Log Depth 446 Latitude: 352458 Longitude: 773532 Altitude of Land Surface: 78 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	78											20	-13	-169	-202		
THICK	--											33	156	33	--		
PCT PERM MATERIAL	--											18	47	21	--		

Arba Water Association. Well No: P28h1
Map No: **47** Log Depth 344 Latitude: 352355 Longitude: 774208 Altitude of Land Surface: 112 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	112											86	58	-89	-142		
THICK	26											28	147	53	--		
PCT PERM MATERIAL	50											14	44	13	--		

Table 3.--*Aquifer and confining unit data*--Continued

JONES COUNTY

Jones County Water System. Well No: R25y1
Map No: **48** Log Depth 485 Latitude: 351054 Longitude: 772922 Altitude of Land Surface: 66 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	66					24	10			-33	-71	-198	-251				
THICK	42					14	43			38	127	53	--				
PCT PERM MATERIAL	55					14	74			<10	59	15	--				

Jones County Water System. Well No: S24u1
Map No: **49** Log Depth 944 Latitude: 350553 Longitude: 772037 Altitude of Land Surface: 49 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	49					33	13	-99	-109	-149	-223	-382	-454	-809	-856		
THICK	16					20	112	10	40	74	159	72	355	47	--		
PCT PERM MATERIAL	--					--	--	--	--	--	--	--	--	--	--		

McDaniels Chapel. Well No: S25h1
Map No: **50** Log Depth 218 Latitude: 350852 Longitude: 772742 Altitude of Land Surface: 55 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	55					42	25	-21	-43	-49	-60						
THICK	13					17	46	22	6	11	--						
PCT PERM MATERIAL	>90					<10	67	18	>90	11	--						

Table 3.--*Aquifer and confining unit data*--Continued

NRCD Beaver Creek Research Sta. Well No: S26i2(x)
Map No: **51** Log Depth 855 Latitude: 350820 Longitude: 773150 Altitude of Land Surface: 55 Basement: -785

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	55					--	--			-43	-91	-186	-275	-438	-484	-682	-705
THICK	--					--	--			48	95	89	163	46	198	23	80
PCT PERM MATERIAL	--					--	--			17	58	28	44	26	58	8	58

R.L. Fordham. Well No: S26x1
Map No: **52** Log Depth 400 Latitude: 354513 Longitude: 773333 Altitude of Land Surface: 73 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	73					40	23			-37	-95	-195	-285				
THICK	33					17	60			58	100	90	--				
PCT PERM MATERIAL	61					24	72			21	74	23	--				

Jones County Water System. Well No: T25j2
Map No: **53** Log Depth 475 Latitude: 350333 Longitude: 772543 Altitude of Land Surface: 47 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	47					27	15	-102	-108	-143	-167	-301	-405				
THICK	20					12	117	6	35	24	134	104	--				
PCT PERM MATERIAL	--					<10	81	<10	71	<10	57	19	--				

Table 3.--*Aquifer and confining unit data*--Continued

Weyerhaeuser Company. Well No: T27t1
Map No: **54** Log Depth 500 Latitude: 350117 Longitude: 773538 Altitude of Land Surface: 56 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	56					--	--			-60	-91	-229	-312				
THICK	--					--	--			31	138	83	--				
PCT PERM MATERIAL	--					--	--			19	67	11	--				

Peter Henderson Oil Company. Well No: U24p- API No. 32-103-1 (Dr. Hofmann No. 1)
Map No: **55** Log Depth 1,232 Latitude: 345615 Longitude: 772430 Altitude of Land Surface: 50 Basement:-1,163

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	50					--	17	-155	-162	-194	-260	-383	-520	-788	-830	-930	-980
THICK	--					--	172	7	32	66	123	137	268	42	100	50	183
PCT PERM MATERIAL	--					--	82	<10	62	17	59	14	48	21	65	<10	57

NRCD Comfort Research Station. Well No: U26j2
Map No: **56** Log Depth 877 Latitude: 345809 Longitude: 773014 Altitude of Land Surface: 71 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	71					61	48	-60	-92	-119	-153	-267	-390	-640	-711		
THICK	10					13	108	32	27	34	114	123	250	71	--		
PCT PERM MATERIAL	50					31	83	16	85	<10	57	24	49	18	--		

Town of Maysville. Well No: V22d1
Map No: **57** Log Depth 504 Latitude: 345435 Longitude: 771330 Altitude of Land Surface: 35 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	35					17	-1	-330	-353	-385	-407						
THICK	18					18	329	23	32	22	--						
PCT PERM MATERIAL	72					17	>90	26	69	18	--						

L E N O I R   C O U N T Y

North Lenoir Water Corporation. Well No: P26q1
Map No: **58** Log Depth 336 Latitude: 352115 Longitude: 773323 Altitude of Land Surface: 75 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	75									61	49	-60	-115				
THICK	14									12	109	55	--				
PCT PERM MATERIAL	>90									17	68	45	--				

NRCD Savannah School Research Sta. Well No: P26u5(x)
Map No: **59** Log Depth 846 Latitude: 352011 Longitude: 773046 Altitude of Land Surface: 72 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	72									23	-24	-114	-168	-342	-362	-563	-590
THICK	49									47	90	54	174	20	201	27	--
PCT PERM MATERIAL	61									11	70	9	46	15	55	7	--

Table 3.--*Aquifer and confining unit data*--Continued

North Lenoir Water Corporation. Well No: P27y2
Map No: **60** Log Depth 365 Latitude: 352034 Longitude: 773926 Altitude of Land Surface: 102 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	102									76	42	-16	-56	-186	-204		
THICK	25									35	58	40	130	18	--		
PCT PERM MATERIAL	>90									14	74	32	48	17	--		

North Lenoir Water Corporation. Well No: P28w1
Map No: **61** Log Depth 408 Latitude: 352043 Longitude: 774225 Altitude of Land Surface: 118 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	118									101	93	51	9	-131	-174		
THICK	17									8	42	42	140	43	--		
PCT PERM MATERIAL	76									12	88	24	46	26	--		

North Lenoir Water Corporation. Well No: P28x1
Map No: **62** Log Depth 380 Latitude: 352008 Longitude: 774344 Altitude of Land Surface: 105 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	105									93	87	39	3	-110	-158		
THICK	12									6	48	36	113	48	--		
PCT PERM MATERIAL	>90									<10	71	28	53	21	--		

NRCD Graingers Research Station. Well No: Q25d11(x)
Map No: **63** Log Depth 833 Latitude: 351937 Longitude: 772842 Altitude of Land Surface: 65 Basement: -733

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	65							45	22	16	-38	-134	-185	-404	-421	-582	-597
THICK	20							23	6	54	96	51	219	17	161	15	136
PCT PERM MATERIAL	80							23	67	15	67	16	48	<10	53	<10	54

City of Kinston. Well No: Q26o1
Map No: **64** Log Depth 480 Latitude: 351659 Longitude: 773459 Altitude of Land Surface: 60 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	60									40	5	-89	-149	-369	-398		
THICK	20									35	94	60	220	29	--		
PCT PERM MATERIAL	75									28	58	20	53	28	--		

City of Kinston. Well No: Q27b6
Map No: **65** Log Depth 420 Latitude: 351919 Longitude: 773639 Altitude of Land Surface: 88 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	88									68	38	-42	-92	-260	-304		
THICK	20									30	80	50	168	44	--		
PCT PERM MATERIAL	75									17	65	20	50	20	--		

Table 3.--*Aquifer and confining unit data*--Continued

N.C. Dept. Corrections(Dobbs Farm) Well No: Q27h-
Map No: **66** Log Depth 453 Latitude: 351843 Longitude: 773749 Altitude of Land Surface: 85 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	85									65	20	-57	-99	-269	-295		
THICK	20									45	77	42	170	26	--		
PCT PERM MATERIAL	80									20	75	21	49	15	--		

NRCD Kinston Supply Yard Res. Sta. Well No: Q27r5
Map No: **67** Log Depth 673 Latitude: 351609 Longitude: 773706 Altitude of Land Surface: 44 Basement: -629

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	44									36	14	-58	-138	-326	-364	-569	-586
THICK	8									22	72	80	188	38	205	17	43
PCT PERM MATERIAL	88									23	58	12	45	18	48	<10	51

Falling Creek Water Company. Well No: Q28k2
Map No: **68** Log Depth 390 Latitude: 351706 Longitude: 774012 Altitude of Land Surface: 98 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	98									64	32	-22	-71				
THICK	34									32	54	49	--				
PCT PERM MATERIAL	70									<10	61	24	--				

Town of LaGrange. Well No: Q29k3
Map No: **69** Log Depth 410 Latitude: 351715 Longitude: 774510 Altitude of Land Surface: 102 Basement: -304

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	102									77	60	30	0	-191	-219		
THICK	25									17	30	30	191	28	85		
PCT PERM MATERIAL	60									<10	85	<10	50	18	53		

City of Kinston. Well No: R26d1
Map No: **70** Log Depth 600 Latitude: 351412 Longitude: 773355 Altitude of Land Surface: 33 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	33									20	-2	-172	-229	-449	-471		
THICK	13									22	170	57	220	22	--		
PCT PERM MATERIAL	85									<10	60	19	45	9	--		

N.C. Dept. Transportation. Well No: R27a3
Map No: **71** Log Depth 453 Latitude: 351433 Longitude: 773538 Altitude of Land Surface: 40 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	40									22	-12	-102	-146	-374			
THICK	18									34	90	44	228	--			
PCT PERM MATERIAL	83									15	72	25	42	--			

Table 3.--*Aquifer and confining unit data*--Continued

Jackson Heights Trailer Park. Well No: R27g1
Map No: **72** Log Depth 325 Latitude: 351315 Longitude: 773802 Altitude of Land Surface: 75 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	75									41	-1	-90	-137				
THICK	34									42	89	47	--				
PCT PERM MATERIAL	--									31	52	15	--				

Deep Run Water Corporation. Well No: R2813
Map No: **73** Log Depth 290 Latitude: 351213 Longitude: 774132 Altitude of Land Surface: 85 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	85									71	45	-55	-105				
THICK	14									26	100	50	--				
PCT PERM MATERIAL	>90									12	56	20	--				

Deep Run Water Corporation. Well No: R29t1
Map No: **74** Log Depth 406 Latitude: 351139 Longitude: 774530 Altitude of Land Surface: 109 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	109									93	74	4	-34	-261	-287		
THICK	16									19	70	38	227	26	--		
PCT PERM MATERIAL	>90									<10	71	16	52	<10	--		

John Casey. Well No: S26cl
Map No: **75** Log Depth 368 Latitude: 350909 Longitude: 773242 Altitude of Land Surface: 79 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	79					36	26			-31	-69	-157	-249				
THICK	43					10	57			38	88	92	--				
PCT PERM MATERIAL	65					<10	>90			21	72	15	--				

Deep Run Water Corporation. Well No: S28hl
Map No: **76** Log Depth 408 Latitude: 350822 Longitude: 774216 Altitude of Land Surface: 110 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	110					92	86			60	27	-66	-136				
THICK	18					6	26			33	93	70	--				
PCT PERM MATERIAL	>90					<10	>90			21	56	26	--				

ONSLOW COUNTY

Bryant Seay. Well No: V24g- API No. 32-133-1 (Seay-Hofmann Forest 1)
Map No: **77** Log Depth 1,433 Latitude: 345400 Longitude: 772345 Altitude of Land Surface: 52 Basement:-1,319

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	52					--	-61	-208	-223	-288	-326	-448	-582	-883	-928	-1,022	-1,068
THICK	--					--	147	15	65	38	122	134	301	45	94	46	251
PCT PERM MATERIAL	--					--	80	<10	63	<10	73	22	46	11	64	17	69

Table 3.--*Aquifer and confining unit data*--Continued

P I T T   C O U N T Y

Town of Bethel. Well No: K24h1
Map No: **78** Log Depth 523 Latitude: 354841 Longitude: 772246 Altitude of Land Surface: 65 Basement: -458

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	65	47	37									-4	-31	-99	-155	-387	-421
THICK	18	10	41									27	68	56	232	34	37
PCT PERM MATERIAL	66	<10	73									15	65	27	68	<10	73

Stokes School. Well No: L2312
Map No: **79** Log Depth 85 Latitude: 354256 Longitude: 771610 Altitude of Land Surface: 55 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	55	37	25									-9	-30				
THICK	18	12	34									21	--				
PCT PERM MATERIAL	50	<10	41									<10	--				

NRCD Bethel Research Station. Well No: L24b3
Map No: **80** Log Depth 690 Latitude: 354457 Longitude: 772155 Altitude of Land Surface: 55 Basement: -635

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	55	32	20									-5	-27	-145	-183	-435	-485
THICK	23	12	25									22	118	38	252	50	150
PCT PERM MATERIAL	35	<10	68									23	51	21	58	34	67

Town of Fountain. Well No: L27x3
Map No: **81** Log Depth 269 Latitude: 354018 Longitude: 773846 Altitude of Land Surface: 108 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	108	90	58									38	20	6	-14		
THICK	18	32	20									18	14	20	--		
PCT PERM MATERIAL	56	<10	70									11	>90	<10	--		

City of Greenville. Well No: M24b1
Map No: **82** Log Depth 502 Latitude: 353904 Longitude: 772143 Altitude of Land Surface: 26 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	26	18	6							-6	-12	-20	-51	-241	-254		
THICK	8	12	12							6	8	31	190	13	--		
PCT PERM MATERIAL	>90	25	67							<10	>90	32	51	<20	--		

City of Greenville. Well No: M24r1
Map No: **83** Log Depth 754 Latitude: 353615 Longitude: 772237 Altitude of Land Surface: 49 Basement: -705

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	49	30	19							1	-14	-29	-56	-286	-316	-524	-559
THICK	19	11	18							15	15	27	230	30	208	35	146
PCT PERM MATERIAL	>90	27	78							<10	80	26	52	17	55	<10	--

Table 3.--*Aquifer and confining unit data*--Continued

City of Greenville. Well No: M24ul
Map No: **84** Log Depth 711 Latitude: 353526 Longitude: 772051 Altitude of Land Surface: 65 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	65	44	25							-1	-21	-49	-65	-332	-355	-528	-564
THICK	21	19	26							20	28	16	267	23	173	36	--
PCT PERM MATERIAL	>90	21	62							35	64	18	48	<10	53	31	--

Town of Farmville. Well No: M26ol
Map No: **85** Log Depth 396 Latitude: 353718 Longitude: 773405 Altitude of Land Surface: 82 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	82	72	66									58	42	-79	-118		
THICK	10	6	8									16	121	39	--		
PCT PERM MATERIAL	>90	<10	>90									19	58	31	--		

Bell Arthur Water Association. Well No: M26ul
Map No: **86** Log Depth 497 Latitude: 353542 Longitude: 773059 Altitude of Land Surface: 79 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	79	51	43									31	11	-181	-197		
THICK	28	8	12									20	192	16	--		
PCT PERM MATERIAL	>90	<10	83									<10	45	<10	--		

Town of Farmville. Well No: M26y1
Map No: **87** Log Depth 514 Latitude: 353628 Longitude: 773546 Altitude of Land Surface: 80 Basement: -423

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	80	72	50									27	20	-96	-156	-393	-400
THICK	8	22	23									7	116	60	237	7	23
PCT PERM MATERIAL	>90	9	83									<10	53	23	56	<10	>90

Town of Farmville. Well No: M27m-
Map No: **88** Log Depth 396 Latitude: 353733 Longitude: 773700 Altitude of Land Surface: 79 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	79	67	53									29	14	-73	-107		
THICK	12	14	24									15	87	34	--		
PCT PERM MATERIAL	>90	21	67									33	56	26	--		

Town of Farmville. Well No: M27v1
Map No: **89** Log Depth 392 Latitude: 353521 Longitude: 773640 Altitude of Land Surface: 82 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	82	74	64									50	34	-70	-117		
THICK	8	10	14									16	104	47	--		
PCT PERM MATERIAL	75	20	71									31	58	17	--		

Table 3.--*Aquifer and confining unit data*--Continued

Town of Farmville. Well No: M27x1
Map No: **90** Log Depth 335 Latitude: 353556 Longitude: 773814 Altitude of Land Surface: 90 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	90	59	55									44	40	-44	-89		
THICK	31	4	11									4	84	45	--		
PCT PERM MATERIAL	81	<10	82									<10	68	27	--		

Town of Grimesland. Well No: N22i1
Map No: **91** Log Depth 250 Latitude: 353344 Longitude: 771126 Altitude of Land Surface: 42 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	42	34	18			-8	-33	-45	-90	-104	-124						
THICK	8	16	26			25	12	45	14	20	--						
PCT PERM MATERIAL	75	19	69			32	67	22	>90	20	--						

Eastern Pines Water Association. Well No: N23b1
Map No: **92** Log Depth 440 Latitude: 353430 Longitude: 771643 Altitude of Land Surface: 62 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	62	36	28					4	-26	-40	-52	-113	-182				
THICK	26	8	32					22	14	12	61	69	--				
PCT PERM MATERIAL	58	38	78					36	>90	33	66	35	--				

Table 3.--*Aquifer and confining unit data*--Continued

Eastern Pines Water Association. Well No: N23d1
Map No: **93** Log Depth 432 Latitude: 353449 Longitude: 771853 Altitude of Land Surface: 56 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	56	38	28					16	2	-8	-26	-54	-98	-328	-360		
THICK	18	10	12					14	10	18	28	44	230	32	--		
PCT PERM MATERIAL	>90	20	>90					<10	90	<10	86	23	46	25	--		

Eastern Pines Water Association. Well No: N23g1
Map No: **94** Log Depth 456 Latitude: 353328 Longitude: 771838 Altitude of Land Surface: 68 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	68	56	40					31	3	-22	-40	-67	-120	-326	-345		
THICK	12	16	9					28	25	18	27	53	206	19	--		
PCT PERM MATERIAL	>90	<10	>90					21	>90	17	63	26	51	<10	--		

Eastern Pines Water Association. Well No: N23o1
Map No: **95** Log Depth 480 Latitude: 353212 Longitude: 771915 Altitude of Land Surface: 67 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	67	47	37					24	15	-5	-17	-71	-111	-347	-375		
THICK	20	10	13					9	20	12	54	40	236	28	--		
PCT PERM MATERIAL	>90	30	>90					<10	>90	<10	56	22	57	14	--		

Table 3.--*Aquifer and confining unit data*--Continued

NRCD Conley School Research Sta. Well No: N23p2(x)
Map No: **96** Log Depth 802 Latitude: 353146 Longitude: 771934 Altitude of Land Surface: 70 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	70	60	48					32	10	-8	-20	-78	-116	-344	-386	-584	-610
THICK	10	12	16					22	18	12	58	38	228	42	198	26	--
PCT PERM MATERIAL	<50	<10	50					18	67	17	53	32	46	17	41	19	--

Town of Winterville. Well No: N24p1
Map No: **97** Log Depth 400 Latitude: 353150 Longitude: 772411 Altitude of Land Surface: 69 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	69	41	34							15	3	-45	-66	-323			
THICK	28	7	19							12	48	21	257	--			
PCT PERM MATERIAL	57	<20	53							17	54	29	47	--			

Town of Winterville. Well No: N24p2
Map No: **98** Log Depth 654 Latitude: 353141 Longitude: 772405 Altitude of Land Surface: 70 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	70	52	48							29	7	-42	-54	-295	-307	-559	-574
THICK	18	4	19							22	49	12	241	12	252	15	--
PCT PERM MATERIAL	--	<10	50							<10	67	42	46	<10	54	20	--

Town of Winterville. Well No: N24q1
Map No: **99** Log Depth 444 Latitude: 353157 Longitude: 772321 Altitude of Land Surface: 69 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	69	52	46							24	3	-52	-71	-301	-332		
THICK	17	6	22							21	55	19	230	31	--		
PCT PERM MATERIAL	47	<10	59							<10	65	<10	53	19	--		

Town of Winterville. Well No: N24y1
Map No: **100** Log Depth 440 Latitude: 353044 Longitude: 772418 Altitude of Land Surface: 60 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	60	48	39							-2	-17	-71	-81	-316	-332		
THICK	12	9	41							15	54	10	235	16	--		
PCT PERM MATERIAL	58	<10	54							27	74	20	43	12	--		

Bell Arthur Water Association. Well No: N25g1
Map No: **101** Log Depth 408 Latitude: 353350 Longitude: 772821 Altitude of Land Surface: 75 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	75	55	41							21	14	-5	-13	-207	-229		
THICK	20	14	20							7	19	8	194	22	-		
PCT PERM MATERIAL	>90	<10	60							<10	>90	<10	48	18	--		

Table 3.--*Aquifer and confining unit data*--Continued

Town of Farmville. Well No: N26h-
Map No: **102** Log Depth 440 Latitude: 353305 Longitude: 773243 Altitude of Land Surface: 82 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	82	64	54							19	16	10	-3	-139	-174		
THICK	18	10	35							3	6	13	136	35	--		
PCT PERM MATERIAL	>90	<10	63							<10	>90	<10	47	14	--		

Eastern Pines Water Association. Well No: O22e1
Map No: **103** Log Depth 514 Latitude: 352958 Longitude: 771459 Altitude of Land Surface: 50 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	50	36	28					-28	-39	-94	-116	-204	-218	-430			
THICK	14	8	56					11	55	22	88	14	212	--			
PCT PERM MATERIAL	43	12	59					27	58	18	52	<10	50	--			

U.S. Information Agency. Well No: O22h2
Map No: **104** Log Depth 470 Latitude: 352801 Longitude: 771203 Altitude of Land Surface: 46 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	46	26	10			-2	-14	-20	-60	-114	-152	-234	-265				
THICK	20	16	12			12	6	40	54	38	82	31	--				
PCT PERM MATERIAL	60	12	>90			<10	>90	12	59	<10	62	<20	--				

Table 3.--*Aquifer and confining unit data*--Continued

NRCD Gardner-Chicod Research Sta. Well No: O23l1(x)

Latitude: 352750 Longitude: 771632 Altitude of Land Surface: 42 Basement:-1,050

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	42	32	24			7	-2	-26	-32	-48	-76	-138	-178	-410	-446	-690	-726
THICK	10	8	17			9	24	6	16	28	62	40	232	36	244	36	324
PCT PERM MATERIAL	>90	<10	>90			<10	88	<10	75	21	71	12	48	14	50	14	54

R.P. Gaskins. Well No: O23t1
Map No: **106** Log Depth 308 Latitude: 352620 Longitude: 771542 Altitude of Land Surface: 43 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	43	27	15			-1	-17	-49	-55	-62	-72	-169	-193				
THICK	16	12	16			16	32	6	7	10	97	24	--				
PCT PERM MATERIAL	69	<10	75			31	84	<10	>90	<10	62	17	--				

Town of Ayden. Well No: O25j1
Map No: **107** Log Depth 570 Latitude: 352805 Longitude: 772519 Altitude of Land Surface: 66 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	66	--	46					28	9	-6	-26	-52	-78	-330	-340		
THICK	--	--	18					19	15	20	26	26	252	10	--		
PCT PERM MATERIAL	--	--	--					--	--	--	85	12	48	<10	--		

Table 3.--*Aquifer and confining unit data*--Continued

Town of Grifton. Well No: P2511
Map No: **108** Log Depth 600 Latitude: 352236 Longitude: 772612 Altitude of Land Surface: 34 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	34							--	18	6	-10	-92	-110	-378	-396		
THICK	--							--	12	16	82	18	268	18	--		
PCT PERM MATERIAL	--							--	>90	<10	79	<20	47	17	--		

W A Y N E   C O U N T Y

Town of Eureka. Well No: N30m3
Map No: **109** Log Depth 215 Latitude: 353222 Longitude: 775221 Altitude of Land Surface: 130 Basement: -85

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	130	106	94									78	66	24	-4	**	
THICK	24	12	16									12	42	28	46		
PCT PERM MATERIAL	>90	<10	62									17	43	28	78		

Norwayne Estates. Well No: N31i1
Map No: **110** Log Depth 391 Latitude: 353304 Longitude: 775605 Altitude of Land Surface: 130 Basement: -42

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	130													97	54	**	
THICK	33													43	80		
PCT PERM MATERIAL	45													9	79		

** Thick clay beds occur between lowermost aquifer and basement rocks.

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Map No: 111 Log Depth 217 Latitude: 352812 Longitude: 773103 Altitude of Land Surface: 97 Basement: -119

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	97											86	75	-46	-66	**	
THICK	11											11	121	20	11		
PCT PERM MATERIAL	64											<10	37	15	>90		

Town of Saulston. Well No: O30q1
Map No: **112** Log Depth 240 Latitude: 352620 Longitude: 773355 Altitude of Land Surface: 128 Basement: -96

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	128											83	72	15	-12	**	
THICK	45											11	57	27	67		
PCT PERM MATERIAL	71											<10	49	11	66		

Seymour Johnson Air Force Base. Well No: P31m-
Map No: **113** Log Depth 221 Latitude: 352232 Longitude: 775726 Altitude of Land Surface: 104 Basement: -57

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	104											84	74	18	-4		
THICK	20											10	56	22	53		
PCT PERM MATERIAL	60											<10	50	<10	51		

** Thick clay beds occur between lowermost aquifer and basement rocks.

Table 3.--*Aquifer and confining unit data*--Continued

Seymour Johnson Air Force Base. Well No: P31y-
Map No: **114** Log Depth 156 Latitude: 352008 Longitude: 775908 Altitude of Land Surface: 64 Basement: -92

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	64													36	1	**	
THICK	28													35	73		
PCT PERM MATERIAL	71													<10	67		

Walnut Creek Estates. Well No: Q30h1
Map No: **115** Log Depth 290 Latitude: 351834 Longitude: 775239 Altitude of Land Surface: 100 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	100											--	32	-82	-104		
THICK	--											--	114	22	--		
PCT PERM MATERIAL	--											--	40	27	--		

Seymour Johnson Air Force Base. Well No: Q31d-
Map No: **116** Log Depth 200 Latitude: 351920 Longitude: 775812 Altitude of Land Surface: 63 Basement: -101

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR- AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	63													25	-1		
THICK	38													26	100		
PCT PERM MATERIAL	58													31	47		

** Thick clay beds occur between lowermost aquifer and basement rocks.

Well No: Q3211
Map No: **117** Log Depth 214 Latitude: 351843 Longitude: 780157 Altitude of Land Surface: 135 Basement: -66

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	135											100	93	37	11	**	
THICK	35											7	56	26	69		
PCT PERM MATERIAL	71											<10	45	19	61		

Cliffs of Neuse State Park. Well No: R30d2
Map No: **118** Log Depth 363 Latitude: 351430 Longitude: 775315 Altitude of Land Surface: 105 Basement: -258

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	105											48	19	-112	-144		
THICK	57											29	131	32	114		
PCT PERM MATERIAL	53											<10	49	25	54		

MRCD Sleepy Creek Research Sta. Well No: R31c2(x)
Map No: **119** Log Depth 324 Latitude: 351439 Longitude: 775748 Altitude of Land Surface: 150 Basement: -172

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	150									127	122	62	28	-62	-86		
THICK	23									5	60	34	90	24	86		
PCT PERM MATERIAL	61									<10	67	23	47	17	48		

** Thick clay beds occur between lowermost aquifer and basement rocks.

Table 3.--*Aquifer and confining unit data*--Continued

W I L S O N   C O U N T Y

Dr. A.B. Williams Estate. Well No: L28f1
Map No: **120** Log Depth 335 Latitude: 354352 Longitude: 774425 Altitude of Land Surface: 121 Basement: -124

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	121	99	82											78	41		
THICK	22	17	4											37	165		
PCT PERM MATERIAL	73	18	>90											32	--		

Bruce Foods, Inc. Well No: L30q1
Map No: **121** Log Depth 454 Latitude: 354144 Longitude: 775354 Altitude of Land Surface: 110 Basement: 34

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	110	93	89											74	68		
THICK	17	4	15											6	34		
PCT PERM MATERIAL	59	<10	80											<10	50		

S.J. Wooten. Well No: M29h1
Map No: **122** Log Depth 156 Latitude: 353811 Longitude: 774725 Altitude of Land Surface: 110 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	110	94	82											65	14		
THICK	16	12	17											51	--		
PCT PERM MATERIAL	75	33	88											27	--		

Log Depth 140 Latitude: 353615 Longitude: 774942 Altitude of Land Surface: 85 Basement: --

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	85	69	65											53	48		
THICK	16	4	12											5	--		
PCT PERM MATERIAL	69	<10	83											<10	--		

Town of Stantonsburg. Well No: M29q-
Map No: **124** Log Depth 162 Latitude: 353601 Longitude: 774857 Altitude of Land Surface: 75 Basement: -87

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	75	69	63									57	49	37	27	**	
THICK	6	6	6									8	12	10	101		
PCT PERM MATERIAL	>90	<10	>90									<10	67	<10	59		

Lee-Woodard High School. Well No: M31i-
Map No: **125** Log Depth 58 Latitude: 353825 Longitude: 775614 Altitude of Land Surface: 122 Basement: 64

	SUR AQ	CONF UNIT	YKN AQ	CONF UNIT	PGR AQ	CONF UNIT	CLH AQ	CONF UNIT	BFR AQ	CONF UNIT	PD AQ	CONF UNIT	BC AQ	CONF UNIT	UCF AQ	CONF UNIT	LCF AQ
ALT TOP	122	103	97											81	72		
THICK	19	6	16											9	8		
PCT PERM MATERIAL	74	<10	56											<20	>90		

** Thick clay beds occur between lowermost aquifer and basement rocks.

U.S. DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY

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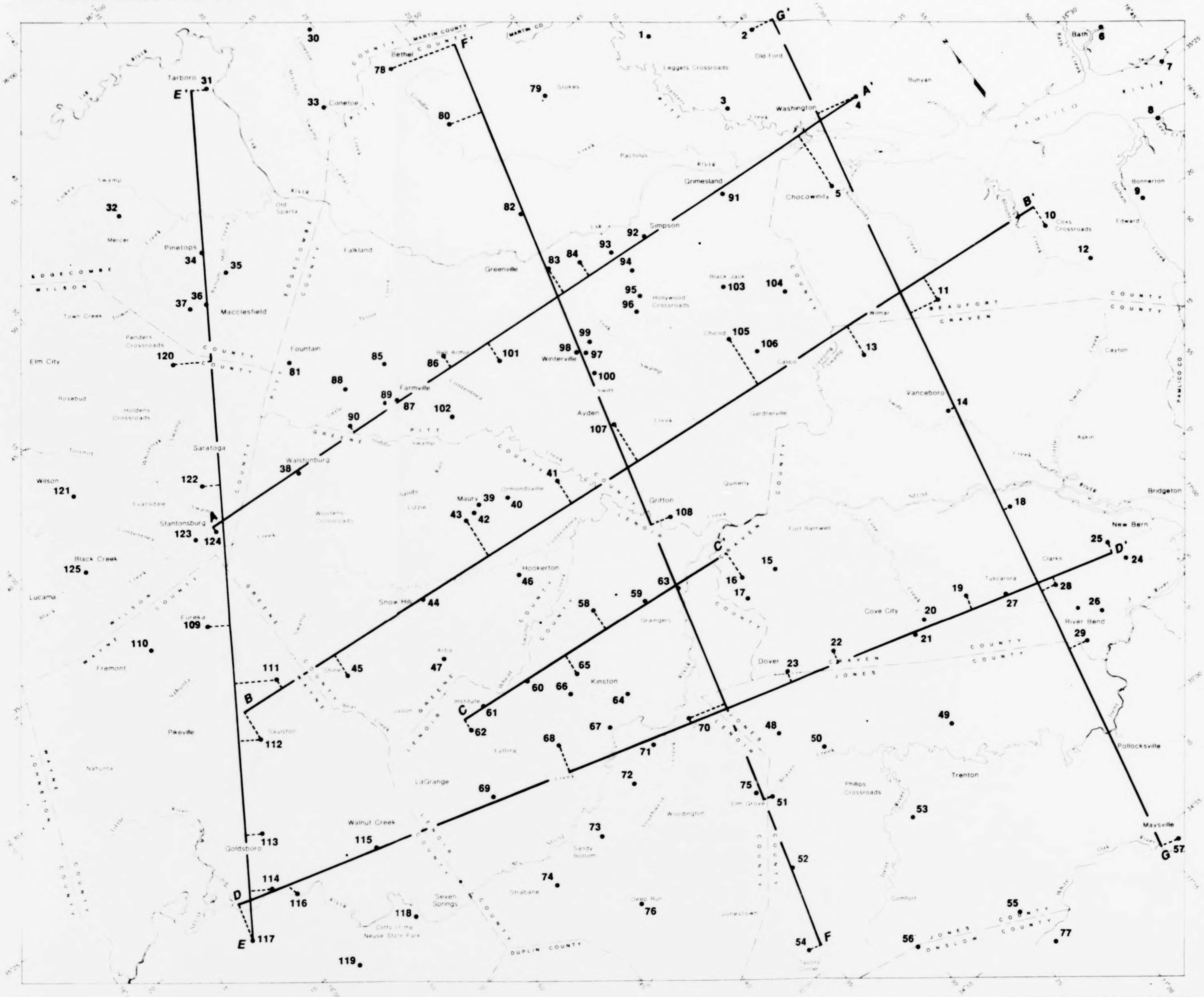
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

WATER-RESOURCES INVESTIGATIONS REPORT 87-4178
PLATE 1



E'
Tarboro
31
30
Bethel
78
F'
MARTIN COUNTY
1
2
G'
Old Ford
Leggets Crossroads
Bath
6
7
33
Conetoe
79
Stokes
80
3
Washington
A'
4
Runyan
8
5
Chocowinity
Grimesland
91
Bonnerton
9
32
Mercer
Old Sparta
82
Pactolus
B'
10
Coxs Crossroads
Edward
12
Pinetops
34
35
Falkland
92
Simpson
93
83
84
Greenville
94
Black Jack
103
104
11
EDGECOMBE
WILSON
37
36
Macclesfield
95
96
Hollywood Crossroads
BEAUFORT
CRAVEN
Pinders Crossroads
Elm City
120
Fountain
81
85
86
Bell Arthur
101
98
99
97
Winterville
100
105
106
Chicod
13
Cayton
88
89
87
Farmville
102
107
Ayden
Vanceboro
14
Rosebud
Holdens Crossroads
90
Gardnerville
Saratoga
38
Walstonburg
41
Askin
Wilson
121
122
Maury
39
40
Grifton
108
Bridgeton
A
Stantonsburg
123
124
43
42
18
New Bern
Black Creek
125
C'
15
Fort Barnwell
25
D'
24
Hookerton
46
16
17
Lucama
Eureka
109
Snow Hill
44
58
59
63
Cove City
19
27
28
26
River Bend
20
21
29
110
Fremont
111
45
47
65
Dover
23
22
JONES
B
60
66
Kinston
64
C
61
62
67
70
48
49
Pikeville
112
68
71
50
Trenton
Pollocksville
LaGrange
72
69
75
51
Phillips Crossroads
53
Walnut Creek
115
73
Goldsboro
113
Sandy Bottom
52
Maysville
G
57
D
114
116
74
Seven Springs
118
Cliffs of the Neuse State Park
76
55
E
117
DUPLIN COUNTY
54
F
56
77
119
ONSLOW

Base adapted from North Carolina Department of Transportation county highway maps

0 2 4 6 8 10 MILES
0 2 4 6 8 10 KILOMETERS

INTERIOR—U.S. GEOLOGICAL SURVEY, RESTON, N.C. 1988

EXPLANATION

A —— A' LINE OF HYDROGEOLOGIC SECTION

25• WELL AND SITE NUMBER

Prepared in cooperation with the

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENOIR WATER CORPORATION

LOCATIONS OF WELL SITES AND HYDROGEOLOGIC SECTIONS IN THE STUDY AREA

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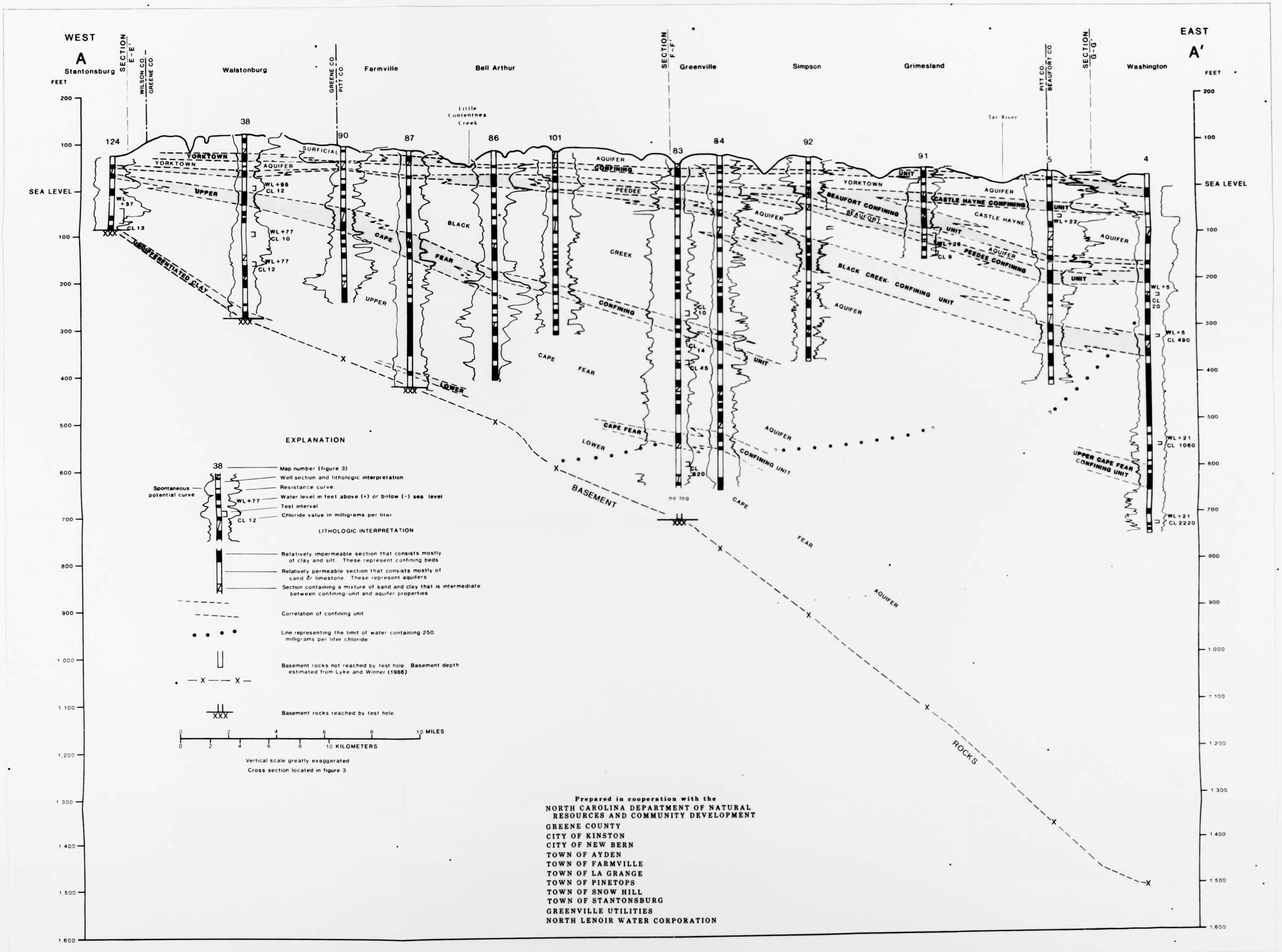
WATER-RESOURCES INVESTIGATIONS REPORT 87-4178
PLATE 2


WEST
A
Stantonsburg
SECTION E-E'
WILSON CO.
GREENE CO.
Walstonburg
GREENE CO.
PITT CO.
Farmville
Bell Arthur
Little Contentnea Creek
SECTION F-F'
Greenville
Simpson
Grimesland
Tar River
PITT CO.
BEAUFORT CO.
SECTION G-G'
Washington
EAST
A'
FEET
200
100
SEA LEVEL
100
200
300
400
500
600
700
800
900
1,000
1,100
1,200
1,300
1,400
1,500
1,600
124
38
90
87
86
101
83
84
92
91
5
4
YORKTOWN
YORKTOWN
AQUIFER
SURFICIAL
AQUIFER
CONFINING
UNIT
YORKTOWN
AQUIFER
PEEDEE
UPPER
BEAUFORT CONFINING
BEAUFORT
UNIT
CASTLE HAYNE CONFINING
UNIT
CASTLE HAYNE
AQUIFER
AQUIFER
PEEDEE CONFINING
UNIT
BLACK
CREEK
AQUIFER
BLACK CREEK CONFINING UNIT
AQUIFER
CAPE
FEAR
CONFINING
UNIT
UPPER
CAPE
FEAR
AQUIFER
LOWER
UNDIFFERENTIATED CLAY
CAPE FEAR
LOWER
CONFINING UNIT
UPPER CAPE FEAR
CONFINING UNIT
CAPE
FEAR
AQUIFER
BASEMENT
ROCKS
WL +37
CL 13
WL +95
CL 12
WL +77
CL 10
WL +77
CL 12
CL 10
CL 14
CL 45
CL 820
no log
WL +26
CL 9
WL +22
WL +5
CL 20
WL +5
CL 490
WL +21
CL 1060
WL +21
CL 2220
EXPLANATION
38
Map number (figure 3)
Well section and lithologic interpretation
Spontaneous potential curve
Resistance curve.
WL +77
Water level in feet above (+) or below (-) sea level
Test interval
CL 12
Chloride value in milligrams per liter
LITHOLOGIC INTERPRETATION
Relatively impermeable section that consists mostly of clay and silt. These represent confining beds
Relatively permeable section that consists mostly of sand or limestone. These represent aquifers
Section containing a mixture of sand and clay that is intermediate between confining-unit and aquifer properties
Correlation of confining unit
Line representing the limit of water containing 250 milligrams per liter chloride
Basement rocks not reached by test hole. Basement depth estimated from Lyke and Winner (1986)
Basement rocks reached by test hole
0
2
4
6
8
10 MILES
0
2
4
6
8
10 KILOMETERS
Vertical scale greatly exaggerated
Cross section located in figure 3

Prepared in cooperation with the
NORTH CAROLINA DEPARTMENT OF NATURAL
RESOURCES AND COMMUNITY DEVELOPMENT
GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENOIR WATER CORPORATION

HYDROGEOLOGIC SECTION A-A' FROM STANTONSBURG, WILSON COUNTY TO WASHINGTON, BEAUFORT COUNTY

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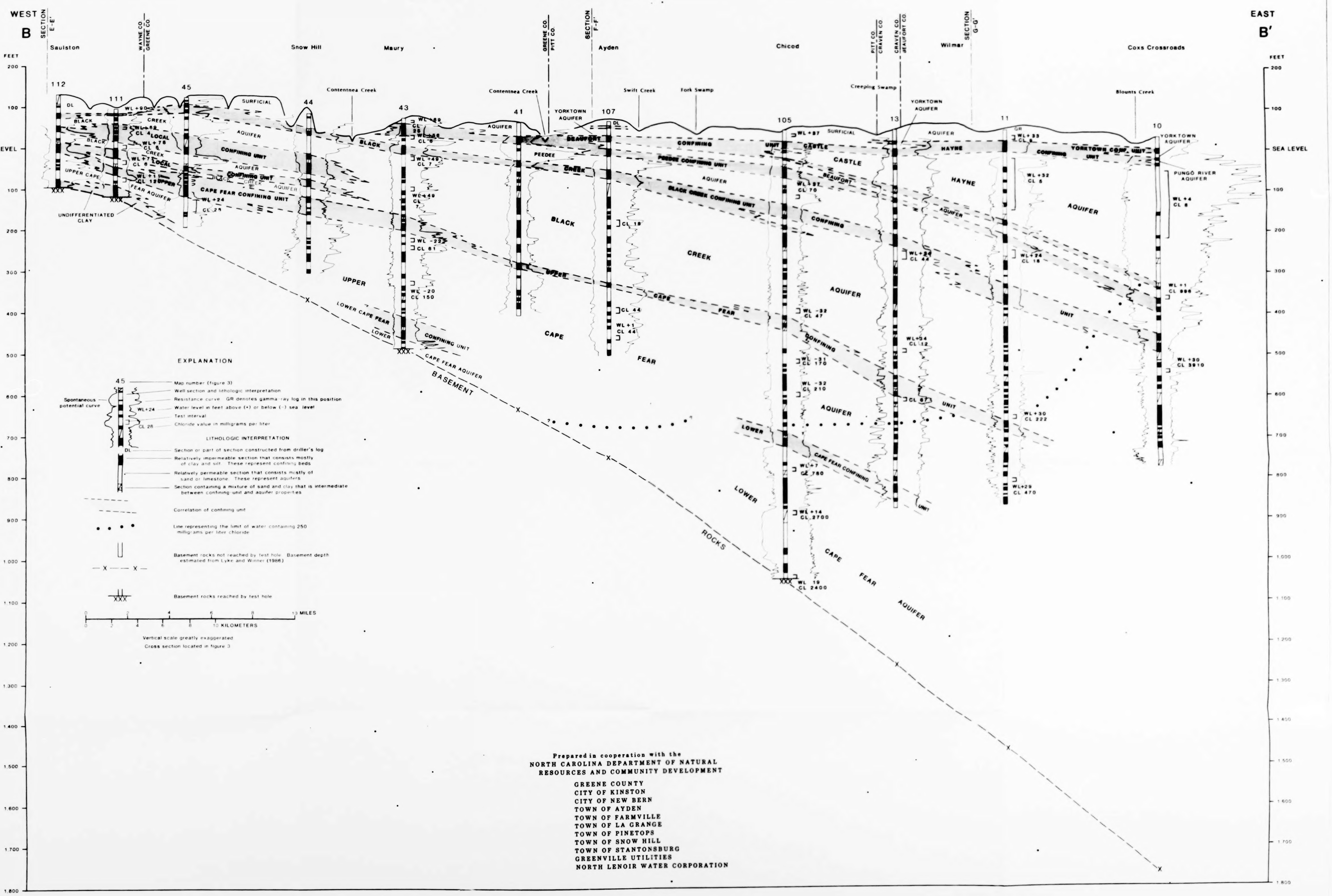
WATER-RESOURCES INVESTIGATIONS REPORT 87-4178
PLATE 3



WEST
B
EAST
B′
SECTION E-E′
WAYNE CO. / GREENE CO.
GREENE CO. / PITT CO.
SECTION F-F′
PITT CO. / CRAVEN CO.
CRAVEN CO. / BEAUFORT CO.
SECTION G-G′
Saulston
Snow Hill
Maury
Ayden
Chicod
Wilmar
Coxs Crossroads
FEET
200
100
SEA LEVEL
100
200
300
400
500
600
700
800
900
1,000
1,100
1,200
1,300
1,400
1,500
1,600
1,700
1,800
112
111
45
44
43
41
107
105
13
11
10
Contentnea Creek
Contentnea Creek
Swift Creek
Fork Swamp
Creeping Swamp
Blounts Creek
DL
GR
SURFICIAL
AQUIFER
YORKTOWN AQUIFER
YORKTOWN CONF. UNIT
CONFINING UNIT
PUNGO RIVER AQUIFER
CASTLE HAYNE CONFINING UNIT
CASTLE HAYNE AQUIFER
BEAUFORT CONFINING UNIT
BEAUFORT AQUIFER
PEEDEE CONFINING UNIT
PEEDEE AQUIFER
BLACK CREEK CONFINING UNIT
BLACK CREEK AQUIFER
LOCAL CONFINING UNIT
LOCAL AQUIFER
UPPER CAPE FEAR CONFINING UNIT
UPPER CAPE FEAR AQUIFER
LOWER CAPE FEAR CONFINING UNIT
LOWER CAPE FEAR AQUIFER
CAPE FEAR CONFINING UNIT
UNDIFFERENTIATED CLAY
BASEMENT ROCKS
WL +90
WL +82
CL 4
WL +78
CL 6
WL +77
CL 6
WL +11
CL 12
WL +24
CL 28
WL +89
CL 25
WL +56
CL 6
WL +49
CL 7
WL +49
CL 7
WL -22
CL 61
WL -20
CL 150
CL 18
CL 44
WL +1
CL 44
WL +87
WL +87
CL 70
WL -32
CL 47
WL -31
CL 170
WL -32
CL 210
WL +7
CL 780
WL +14
CL 2700
WL 19
CL 2400
WL +24
CL 44
WL +34
CL 12
CL 671
WL +33
CL 6
WL +32
CL 5
WL +24
CL 18
WL +30
CL 222
WL +29
CL 470
WL +4
CL 8
WL +1
CL 996
WL +30
CL 3910
EXPLANATION
45 Map number (figure 3)
Well section and lithologic interpretation
Spontaneous potential curve
Resistance curve. GR denotes gamma-ray log in this position
WL+24 Water level in feet above (+) or below (-) sea level
Test interval
CL 28 Chloride value in milligrams per liter
LITHOLOGIC INTERPRETATION
DL Section or part of section constructed from driller's log
Relatively impermeable section that consists mostly of clay and silt. These represent confining beds
Relatively permeable section that consists mostly of sand or limestone. These represent aquifers
Section containing a mixture of sand and clay that is intermediate between confining-unit and aquifer properties
Correlation of confining unit
Line representing the limit of water containing 250 milligrams per liter chloride
Basement rocks not reached by test hole. Basement depth estimated from Lyke and Winner (1986)
Basement rocks reached by test hole
0 2 4 6 8 10 MILES
0 2 4 6 8 10 KILOMETERS
Vertical scale greatly exaggerated
Cross section located in figure 3

Prepared in cooperation with the
NORTH CAROLINA DEPARTMENT OF NATURAL
RESOURCES AND COMMUNITY DEVELOPMENT

GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENOIR WATER CORPORATION

HYDROGEOLOGIC SECTION B-B′ FROM SAULSTON, WAYNE COUNTY TO COX'S CROSSROADS, BEAUFORT COUNTY

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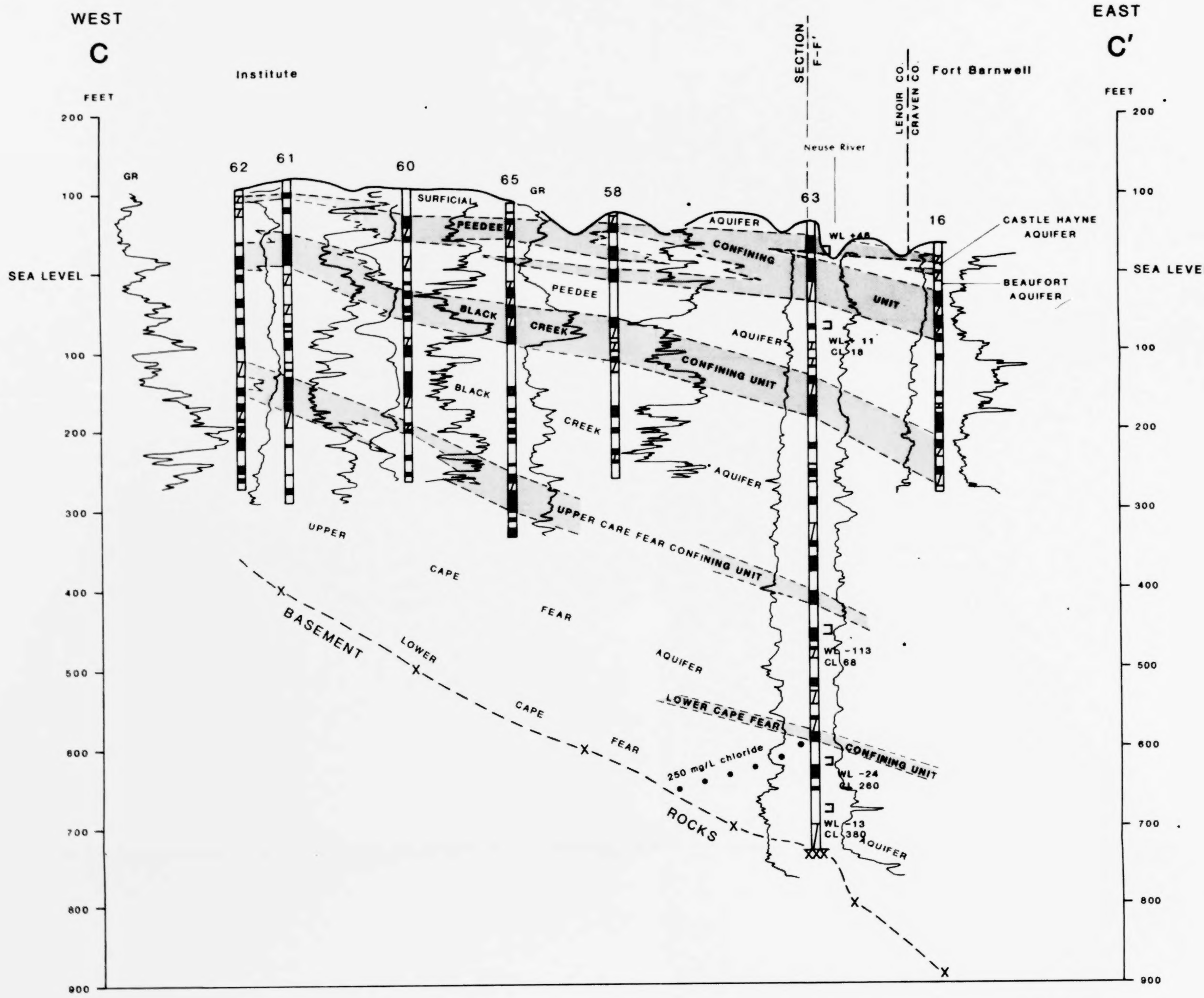
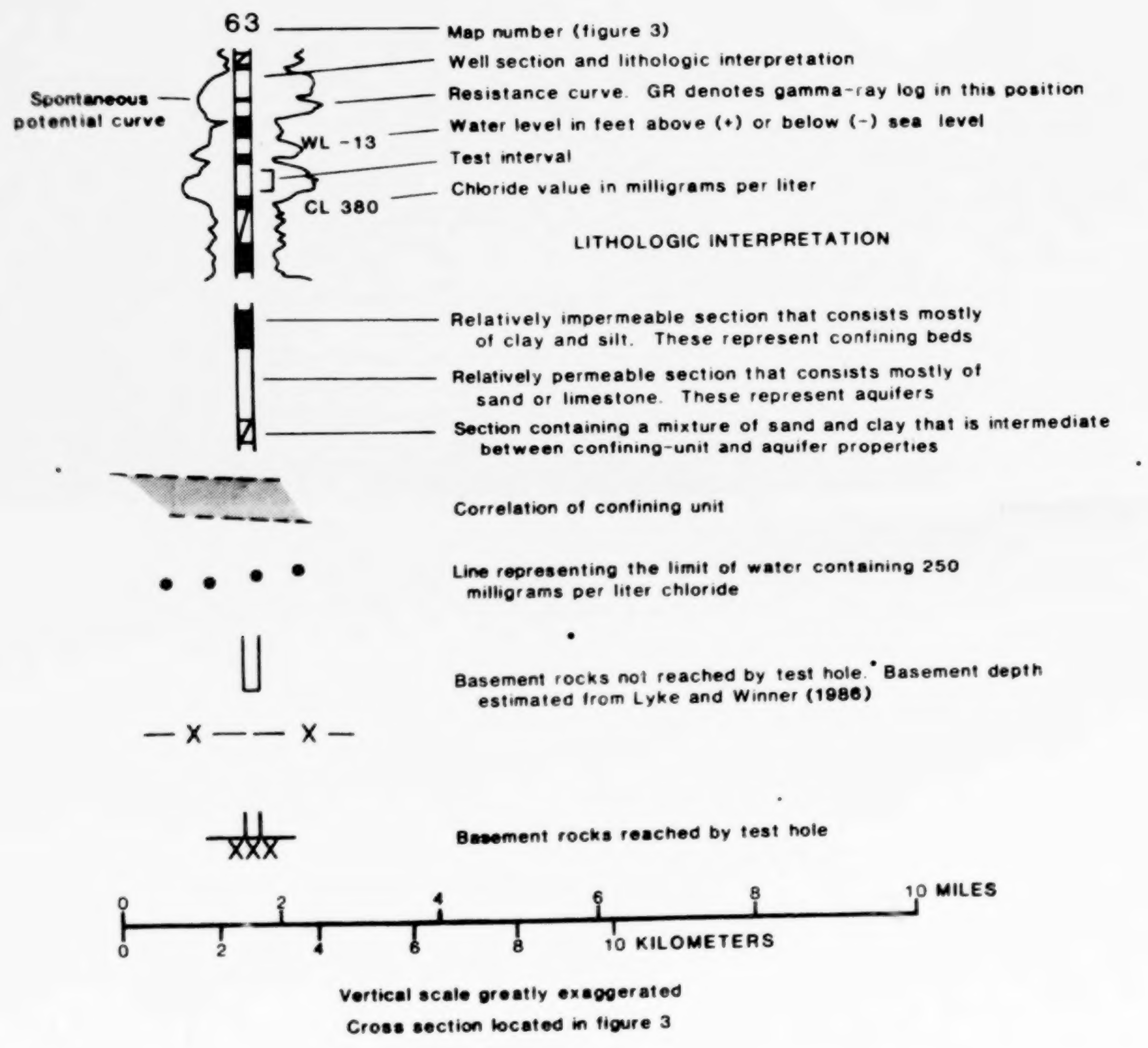

WEST
C
Institute
FEET
200
100
SEA LEVEL
100
200
300
400
500
600
700
800
900
GR
62
61
60
65
GR
58
63
16
SECTION F-F'
Neuse River
LENOIR CO.
CRAVEN CO.
Fort Barnwell
EAST
C'
FEET
200
100
SEA LEVEL
100
200
300
400
500
600
700
800
900
SURFICIAL
AQUIFER
PEEDEE
CONFINING
UNIT
CASTLE HAYNE AQUIFER
BEAUFORT AQUIFER
WL +48
PEEDEE
AQUIFER
WL + 11
CL 18
BLACK
CREEK
CONFINING UNIT
BLACK
CREEK
AQUIFER
UPPER CAPE FEAR CONFINING UNIT
UPPER
CAPE
FEAR
AQUIFER
WL -113
CL 68
BASEMENT
LOWER
CAPE
FEAR
LOWER CAPE FEAR
CONFINING UNIT
250 mg/L chloride
WL -24
CL 260
ROCKS
WL -13
CL 380
AQUIFER

EXPLANATION


63
Spontaneous potential curve
WL -13
CL 380
0
2
4
6
8
10 MILES
0
2
4
6
8
10 KILOMETERS

Map number (figure 3)
Well section and lithologic interpretation
Resistance curve. GR denotes gamma-ray log in this position
Water level in feet above (+) or below (-) sea level
Test interval
Chloride value in milligrams per liter

LITHOLOGIC INTERPRETATION

Relatively impermeable section that consists mostly of clay and silt. These represent confining beds

Relatively permeable section that consists mostly of sand or limestone. These represent aquifers

Section containing a mixture of sand and clay that is intermediate between confining-unit and aquifer properties

Correlation of confining unit

Line representing the limit of water containing 250 milligrams per liter chloride

Basement rocks not reached by test hole. Basement depth estimated from Lyke and Winner (1986)

Basement rocks reached by test hole

Vertical scale greatly exaggerated
Cross section located in figure 3

Prepared in cooperation with the
NORTH CAROLINA DEPARTMENT OF NATURAL
RESOURCES AND COMMUNITY DEVELOPMENT

GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENOIR WATER CORPORATION

HYDROGEOLOGIC SECTION C-C' FROM INSTITUTE, LENOIR COUNTY TO FORT BARNWELL, CRAVEN COUNTY

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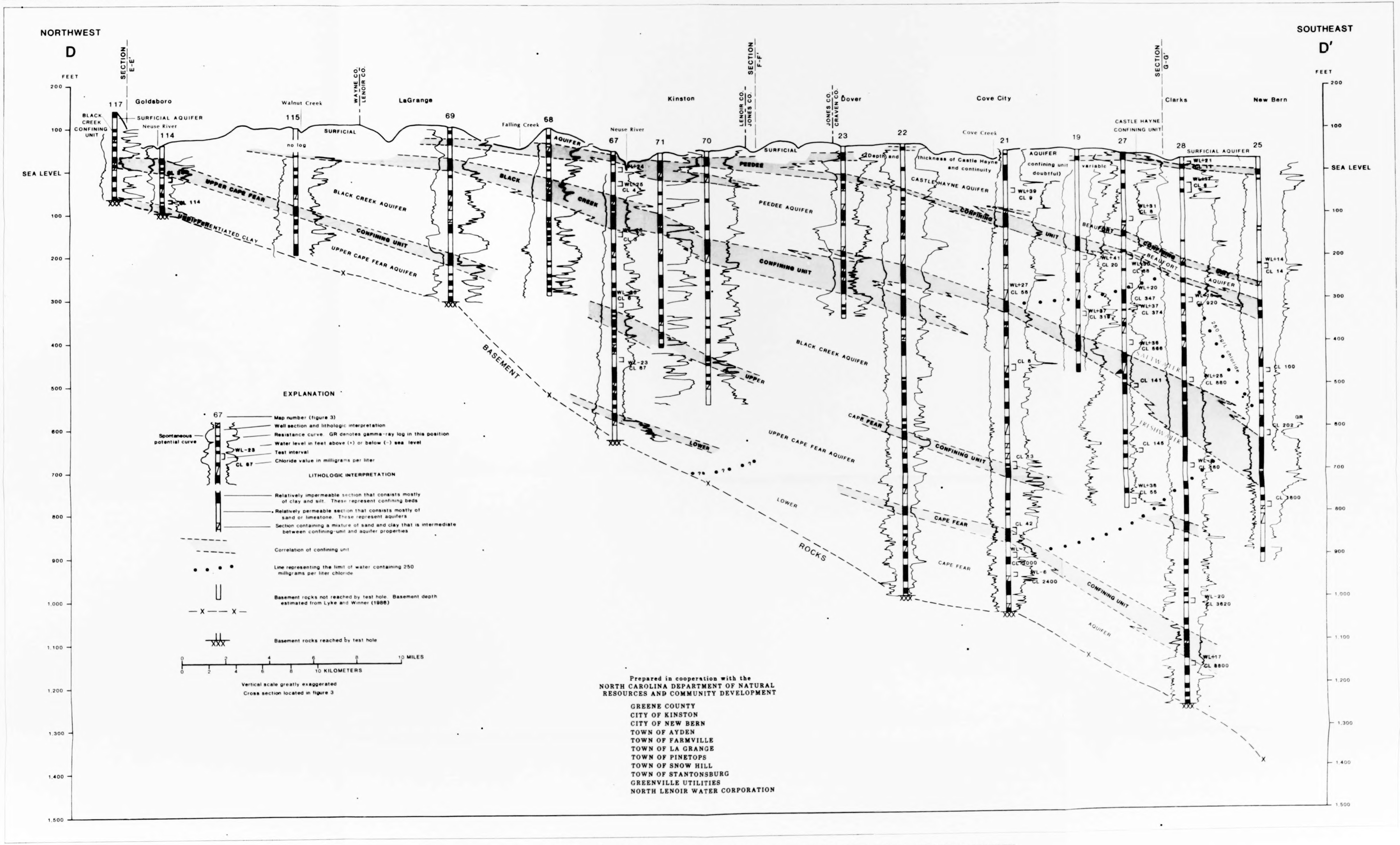
U.S. GEOLOGICAL SURVEY

WATER-RESOURCES INVESTIGATIONS REPORT 87-4178
PLATE 5


NORTHWEST
D
SOUTHEAST
D'
FEET
200
100
SEA LEVEL
100
200
300
400
500
600
700
800
900
1,000
1,100
1,200
1,300
1,400
1,500
SECTION E-E'
WAYNE CO. | LENOIR CO.
SECTION F-F'
LENOIR CO. | JONES CO.
JONES CO. | CRAVEN CO.
SECTION G-G'
Goldsboro
Walnut Creek
LaGrange
Falling Creek
Kinston
Neuse River
Dover
Cove City
Cove Creek
Clarks
New Bern
117
114
115
69
68
67
71
70
23
22
21
19
27
28
25
BLACK CREEK CONFINING UNIT
SURFICIAL AQUIFER
no log
SURFICIAL
SURFICIAL AQUIFER
UPPER CAPE FEAR
UNDIFFERENTIATED CLAY
CL 114
BLACK CREEK AQUIFER
CONFINING UNIT
UPPER CAPE FEAR AQUIFER
BLACK CREEK
AQUIFER
PEEDEE
PEEDEE AQUIFER
CONFINING UNIT
(Depth and thickness of Castle Hayne and continuity
AQUIFER confining unit doubtful)
variable
CASTLE HAYNE CONFINING UNIT
CASTLE HAYNE AQUIFER
CONFINING UNIT
BEAUFORT CONFINING UNIT
BEAUFORT AQUIFER
BLACK CREEK AQUIFER
UPPER
LOWER
CAPE FEAR CONFINING UNIT
UPPER CAPE FEAR AQUIFER
LOWER CAPE FEAR CONFINING UNIT
LOWER CAPE FEAR AQUIFER
BASEMENT ROCKS
SALTWATER
FRESHWATER
250 mg/L chloride
WL+24
WL+25
CL 4
WL-26
CL 6
WL-26
CL 6
WL-23
CL 67
WL+39
CL 9
WL+27
CL 58
CL 8
CL 13
CL 42
WL-7
CL 3000
WL-6
CL 2400
WL+41
CL 20
WL+37
CL 319
WL+31
CL 8
WL+30
CL 68
WL+20
CL 347
WL+37
CL 374
WL+36
CL 666
CL 141
CL 146
WL+36
CL 55
WL+21
CL 11
WL+17
CL 6
WL+16
CL 920
WL+25
CL 880
WL-6
CL 180
WL-20
CL 3620
WL+17
CL 6800
WL+14
CL 14
CL 100
CL 202
GR
CL 3800
EXPLANATION
67
Map number (figure 3)
Well section and lithologic interpretation
Spontaneous potential curve
Resistance curve. GR denotes gamma-ray log in this position
Water level in feet above (+) or below (-) sea level
WL-23
Test interval
CL 67
Chloride value in milligrams per liter
LITHOLOGIC INTERPRETATION
Relatively impermeable section that consists mostly of clay and silt. These represent confining beds
Relatively permeable section that consists mostly of sand or limestone. These represent aquifers
Section containing a mixture of sand and clay that is intermediate between confining-unit and aquifer properties
Correlation of confining unit
Line representing the limit of water containing 250 milligrams per liter chloride
Basement rocks not reached by test hole. Basement depth estimated from Lyke and Winner (1986)
Basement rocks reached by test hole
0 2 4 6 8 10 MILES
0 2 4 6 8 10 KILOMETERS
Vertical scale greatly exaggerated
Cross section located in figure 3

Prepared in cooperation with the
NORTH CAROLINA DEPARTMENT OF NATURAL
RESOURCES AND COMMUNITY DEVELOPMENT

GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENOIR WATER CORPORATION

HYDROGEOLOGIC SECTION D-D' FROM GOLDSBORO, WAYNE COUNTY TO NEW BERN, CRAVEN COUNTY

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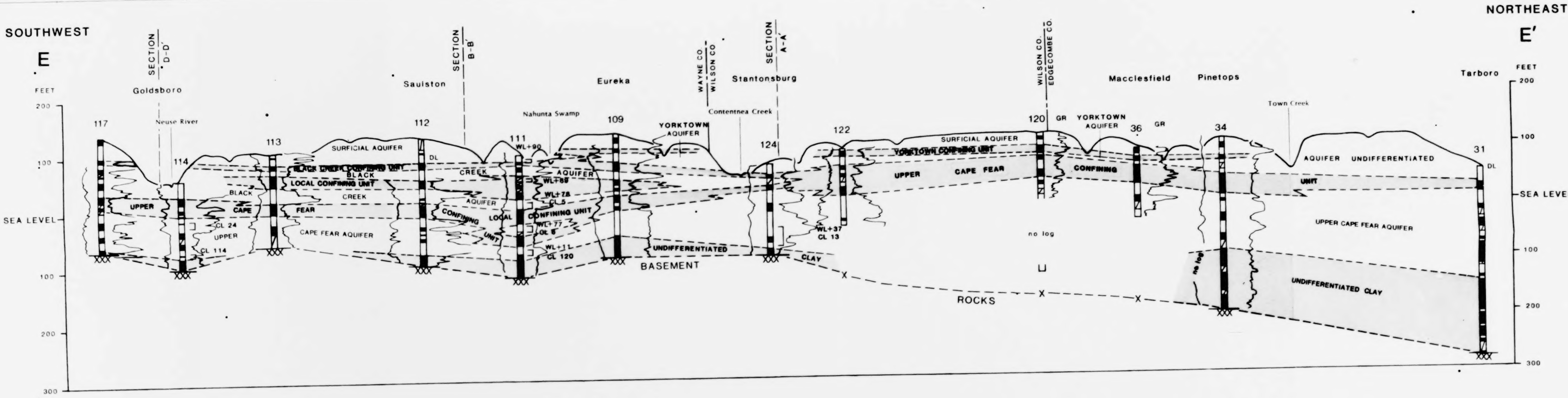
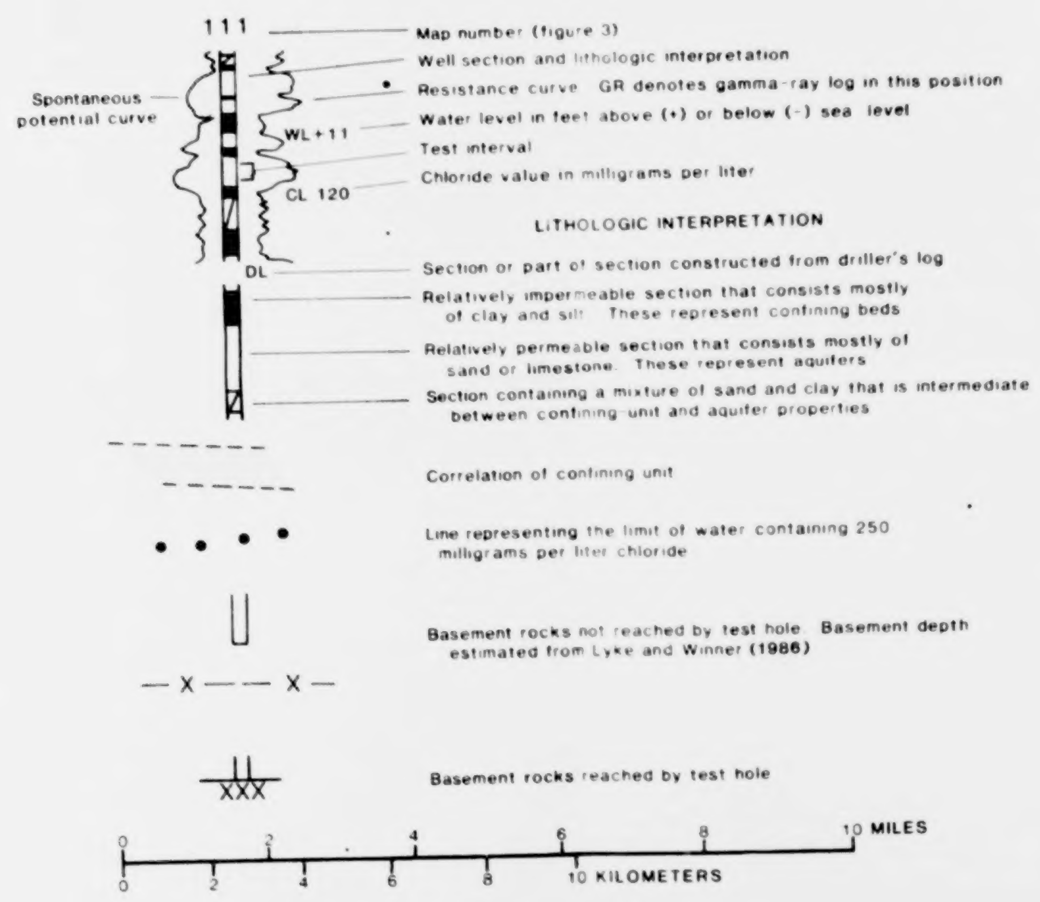
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

WATER-RESOURCES INVESTIGATIONS REPORT 87-4178
PLATE 6


SOUTHWEST
E
NORTHEAST
E′
FEET
200
100
SEA LEVEL
100
200
300
SECTION D-D′
Goldsboro
Neuse River
Saulston
SECTION B-B′
Eureka
Nahunta Swamp
WAYNE CO.
WILSON CO.
SECTION A-A′
Stantonsburg
Contentnea Creek
WILSON CO.
EDGECOMBE CO.
Macclesfield
Pinetops
Town Creek
Tarboro
117
114
113
112
111
109
124
122
120
36
34
31
SURFICIAL AQUIFER
BLACK CREEK CONFINING UNIT
BLACK
LOCAL CONFINING UNIT
CREEK
AQUIFER
UPPER
CAPE
FEAR
CAPE FEAR AQUIFER
CL 24
UPPER
CL 114
DL
CONFINING
LOCAL
CONFINING UNIT
UNIT
WL+90
WL+69
WL+78
CL 5
WL+77
CL 8
WL+11
CL 120
YORKTOWN AQUIFER
UNDIFFERENTIATED
BASEMENT
CLAY
ROCKS
WL+37
CL 13
YORKTOWN CONFINING UNIT
UPPER
CAPE FEAR
CONFINING
UNIT
GR
no log
AQUIFER UNDIFFERENTIATED
UPPER CAPE FEAR AQUIFER
UNDIFFERENTIATED CLAY

EXPLANATION


111
Spontaneous potential curve
WL+11
CL 120
DL
0
2
4
6
8
10 MILES
0
2
4
6
8
10 KILOMETERS

Map number (figure 3)
Well section and lithologic interpretation
Resistance curve. GR denotes gamma-ray log in this position
Water level in feet above (+) or below (-) sea level
Test interval
Chloride value in milligrams per liter

LITHOLOGIC INTERPRETATION

Section or part of section constructed from driller's log
Relatively impermeable section that consists mostly of clay and silt. These represent confining beds
Relatively permeable section that consists mostly of sand or limestone. These represent aquifers
Section containing a mixture of sand and clay that is intermediate between confining-unit and aquifer properties
Correlation of confining unit
Line representing the limit of water containing 250 milligrams per liter chloride
Basement rocks not reached by test hole. Basement depth estimated from Lyke and Winner (1986)
Basement rocks reached by test hole

Vertical scale greatly exaggerated
Cross section located in figure 3

Prepared in cooperation with the
NORTH CAROLINA DEPARTMENT OF NATURAL
RESOURCES AND COMMUNITY DEVELOPMENT
GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENIOR WATER CORPORATION

HYDROGEOLOGIC SECTION E-E′ FROM GOLDSBORO, WAYNE COUNTY TO TARBORO, EDGECOMBE COUNTY

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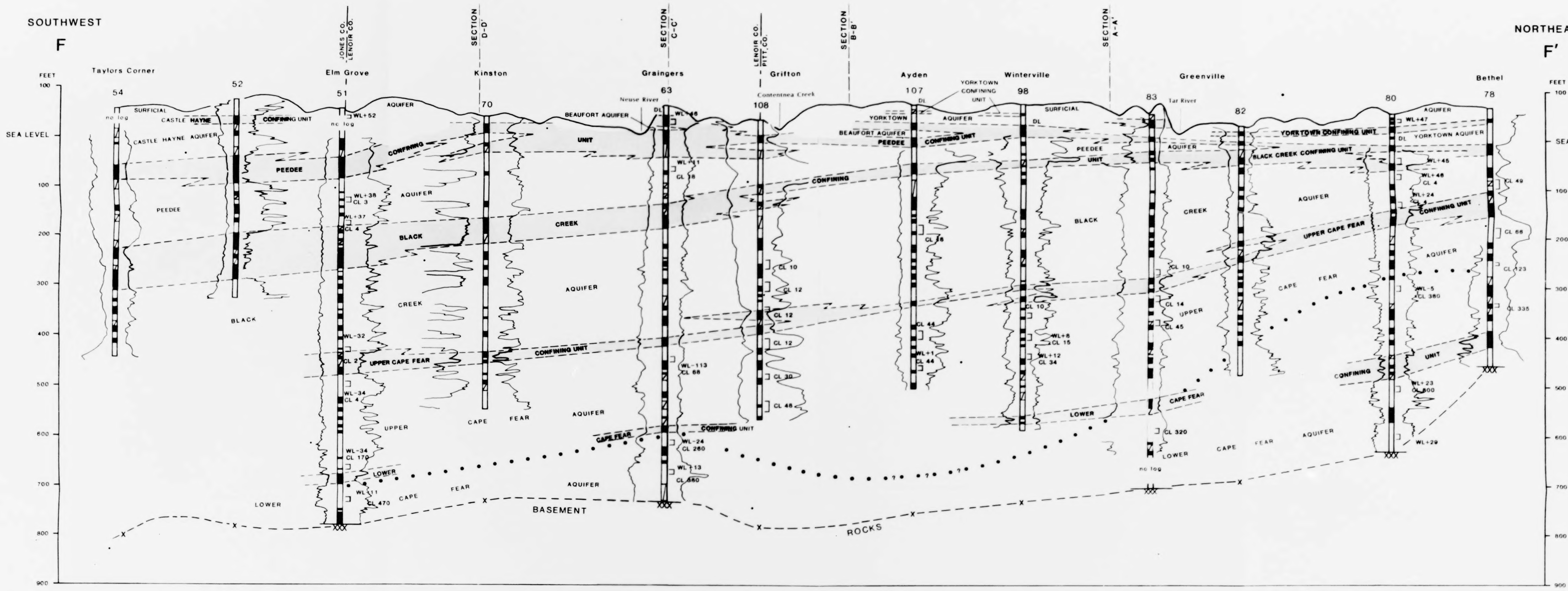
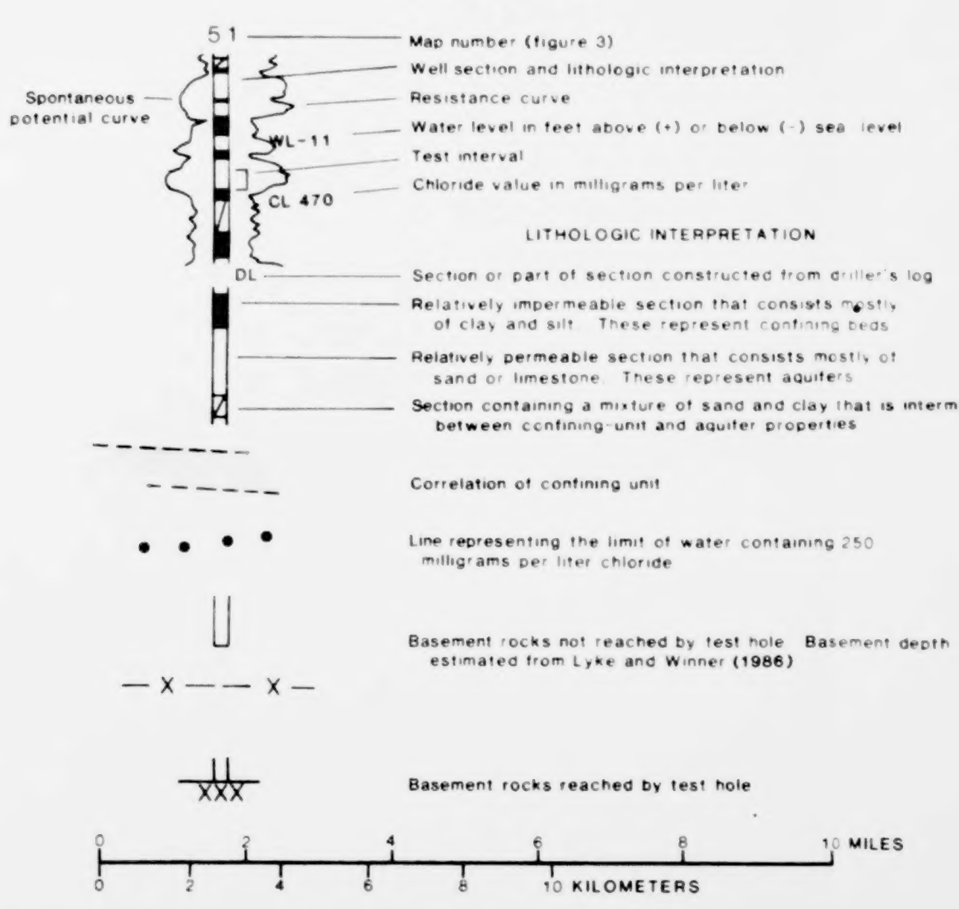
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

WATER-RESOURCES INVESTIGATIONS REPORT 87-4178
PLATE 7


SOUTHWEST
F
NORTHEAST
F'
FEET
100
SEA LEVEL
100
200
300
400
500
600
700
800
900
Taylors Corner
JONES CO.
LENOIR CO.
Elm Grove
SECTION D-D'
Kinston
SECTION C-C'
Graingers
LENOIR CO.
PITT CO.
Grifton
SECTION B-B'
Ayden
Winterville
SECTION A-A'
Greenville
Bethel
54
52
51
70
63
108
107
98
83
82
80
78
Neuse River
Contentnea Creek
Tar River
no log
DL
SURFICIAL
AQUIFER
CASTLE HAYNE
CONFINING UNIT
CASTLE HAYNE AQUIFER
PEEDEE
CONFINING
UNIT
AQUIFER
BLACK
CREEK
BEAUFORT AQUIFER
YORKTOWN
YORKTOWN CONFINING UNIT
YORKTOWN AQUIFER
BLACK CREEK CONFINING UNIT
UPPER CAPE FEAR
CONFINING UNIT
UPPER
CAPE
FEAR
LOWER
CAPE FEAR
BASEMENT
ROCKS
WL+52
WL+38
CL 3
WL+37
CL 4
WL-32
CL 2
WL-34
CL 4
WL-34
CL 170
WL-11
CL 470
WL+46
WL+11
CL 18
WL-113
CL 68
WL-24
CL 260
WL-113
CL 880
CL 10
CL 12
CL 12
CL 12
CL 30
CL 48
CL 18
CL 44
WL+1
CL 44
CL 10
WL+8
CL 15
WL+12
CL 34
CL 10
CL 14
CL 45
CL 320
WL+47
WL+45
WL+48
CL 4
WL+24
CL 4
WL-5
CL 380
WL+23
CL 800
WL+29
CL 49
CL 68
CL 123
CL 335
?

EXPLANATION


51
Spontaneous potential curve
WL-11
CL 470
DL
0
2
4
6
8
10 MILES
0
2
4
6
8
10 KILOMETERS

Map number (figure 3)
Well section and lithologic interpretation
Resistance curve
Water level in feet above (+) or below (-) sea level
Test interval
Chloride value in milligrams per liter

LITHOLOGIC INTERPRETATION

Section or part of section constructed from driller's log
Relatively impermeable section that consists mostly of clay and silt. These represent confining beds
Relatively permeable section that consists mostly of sand or limestone. These represent aquifers
Section containing a mixture of sand and clay that is intermediate between confining-unit and aquifer properties
Correlation of confining unit
Line representing the limit of water containing 250 milligrams per liter chloride
Basement rocks not reached by test hole. Basement depth estimated from Lyke and Winner (1986)
Basement rocks reached by test hole

Vertical scale greatly exaggerated
Cross section located in figure 3

Prepared in cooperation with the
NORTH CAROLINA DEPARTMENT OF NATURAL
RESOURCES AND COMMUNITY DEVELOPMENT
GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENOIR WATER CORPORATION

HYDROGEOLOGIC SECTION F-F' FROM TAYLORS CORNER, JONES COUNTY TO BETHEL, PITT COUNTY

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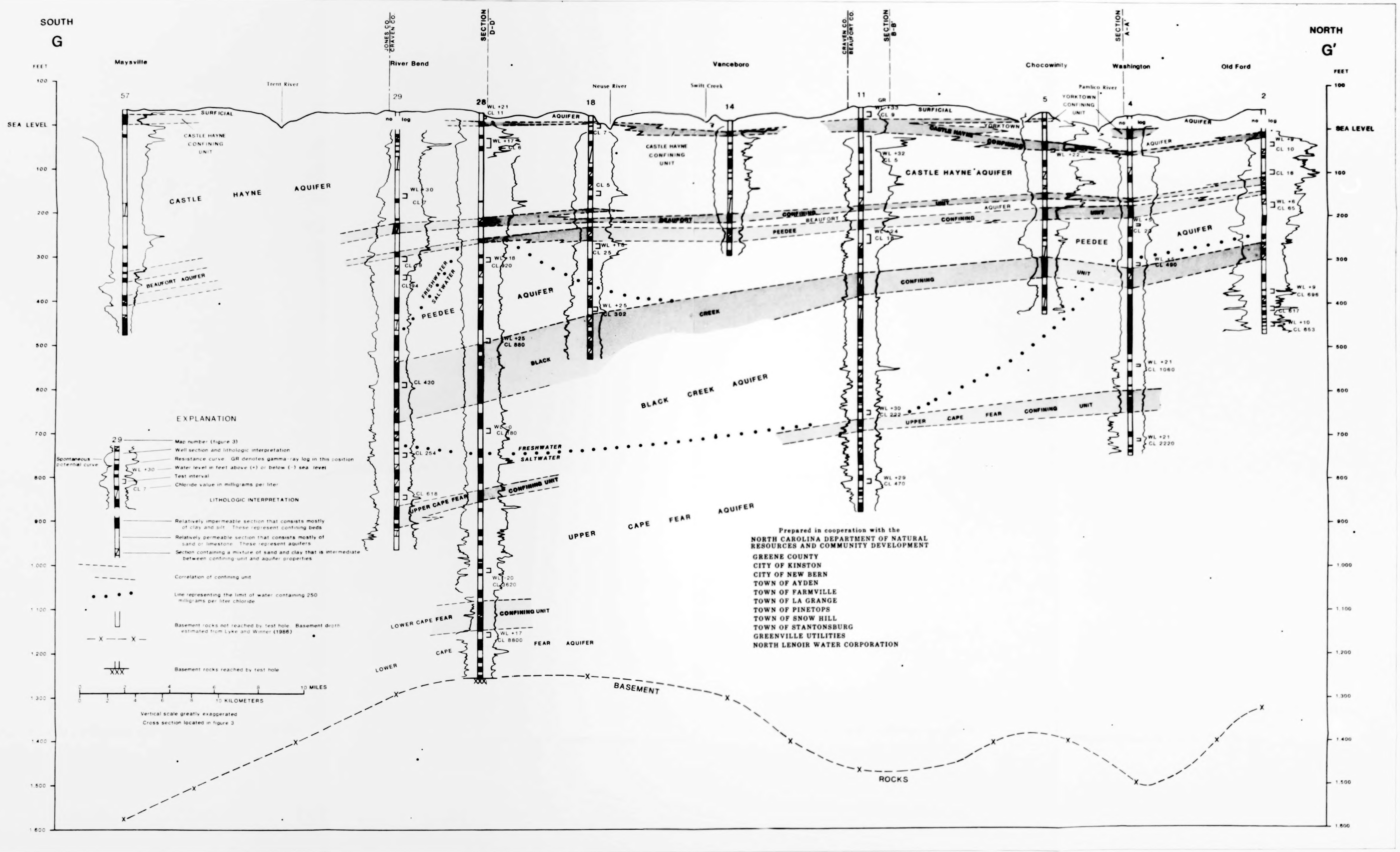
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

WATER-RESOURCES INVESTIGATIONS REPORT 87-4178
PLATE 8


SOUTH
G
NORTH
G′
FEET
SEA LEVEL
100
100
200
300
400
500
600
700
800
900
1,000
1,100
1,200
1,300
1,400
1,500
1,600
Maysville
River Bend
Vanceboro
Chocowinity
Washington
Old Ford
JONES CO.
CRAVEN CO.
CRAVEN CO.
BEAUFORT CO.
SECTION D-D′
SECTION B-B′
SECTION A-A′
Trent River
Neuse River
Swift Creek
Pamlico River
57
29
28
18
14
11
5
4
2
no log
GR
SURFICIAL AQUIFER
CASTLE HAYNE CONFINING UNIT
CASTLE HAYNE AQUIFER
YORKTOWN CONFINING UNIT
YORKTOWN AQUIFER
BEAUFORT AQUIFER
BEAUFORT CONFINING UNIT
PEEDEE CONFINING UNIT
PEEDEE AQUIFER
BLACK CREEK CONFINING UNIT
BLACK CREEK AQUIFER
FRESHWATER SALTWATER
UPPER CAPE FEAR CONFINING UNIT
UPPER CAPE FEAR AQUIFER
LOWER CAPE FEAR CONFINING UNIT
LOWER CAPE FEAR AQUIFER
BASEMENT ROCKS
WL +21
CL 11
WL +17
CL 6
WL +30
CL 7
WL +18
CL 920
CL 94
WL +25
CL 880
CL 430
WL -0
CL 180
CL 254
CL 618
WL -20
CL 2620
WL +17
CL 8800
CL 7
CL 5
WL +18
CL 25
WL +25
CL 302
WL +33
CL 9
WL +32
CL 5
WL +24
CL 18
WL +30
CL 222
WL +29
CL 470
WL +22
WL +5
CL 20
WL +5
CL 490
WL +21
CL 1060
WL +21
CL 2220
WL +9
CL 10
CL 18
WL +6
CL 65
WL +9
CL 696
CL 617
WL +10
CL 653
EXPLANATION
29
Map number (figure 3)
Well section and lithologic interpretation
Spontaneous potential curve
Resistance curve. GR denotes gamma-ray log in this position
WL +30
Water level in feet above (+) or below (-) sea level
Test interval
CL 7
Chloride value in milligrams per liter
LITHOLOGIC INTERPRETATION
Relatively impermeable section that consists mostly of clay and silt. These represent confining beds
Relatively permeable section that consists mostly of sand or limestone. These represent aquifers
Section containing a mixture of sand and clay that is intermediate between confining-unit and aquifer properties
Correlation of confining unit
Line representing the limit of water containing 250 milligrams per liter chloride
Basement rocks not reached by test hole. Basement depth estimated from Lyke and Winner (1986)
Basement rocks reached by test hole
0 2 4 6 8 10 MILES
0 2 4 6 8 10 KILOMETERS
Vertical scale greatly exaggerated
Cross section located in figure 3

Prepared in cooperation with the
NORTH CAROLINA DEPARTMENT OF NATURAL
RESOURCES AND COMMUNITY DEVELOPMENT
GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENOIR WATER CORPORATION

HYDROGEOLOGIC SECTION G-G′ FROM MAYSVILLE, JONES COUNTY TO OLD FORD, BEAUFORT COUNTY

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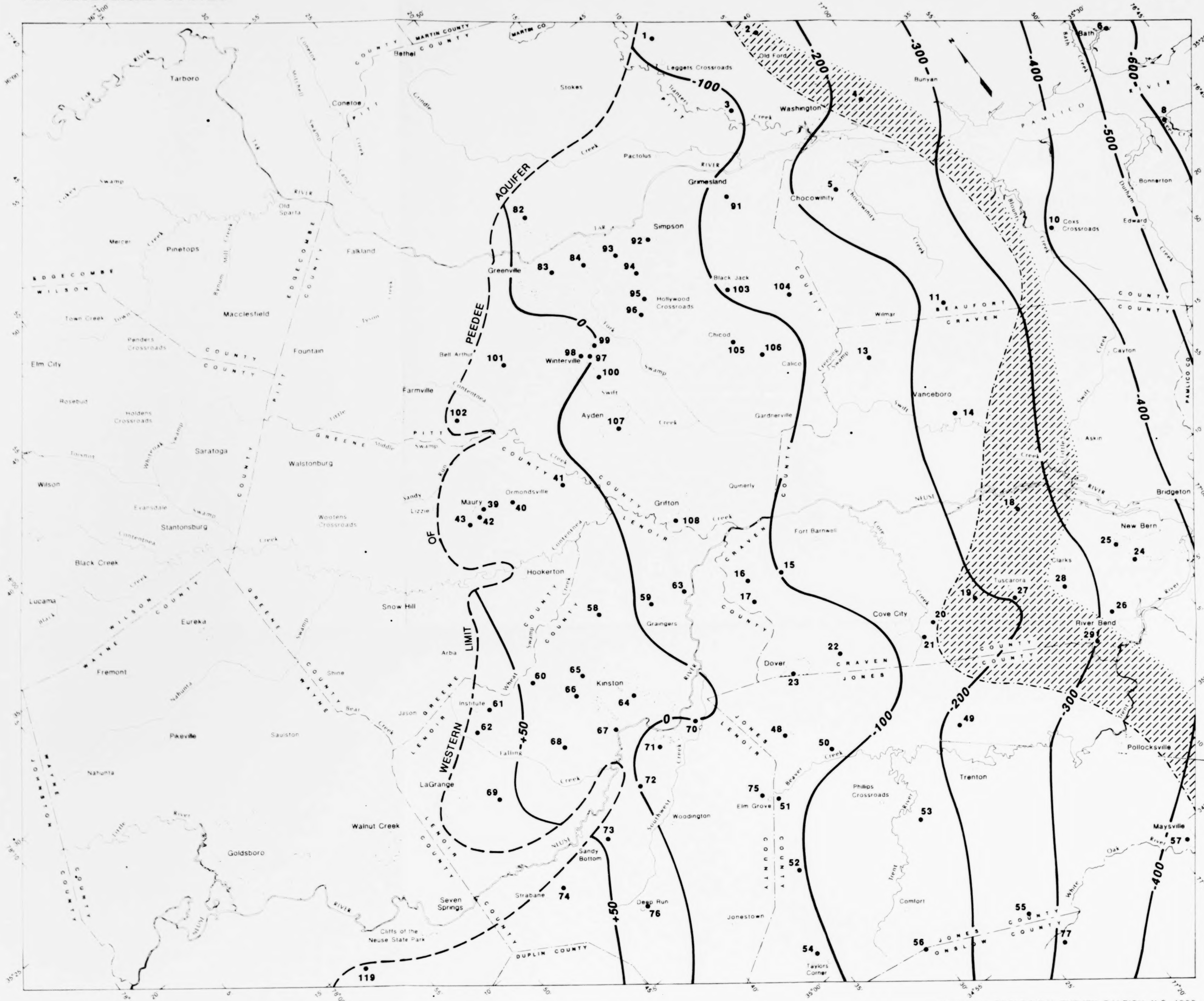
U.S. GEOLOGICAL SURVEY

WATER-RESOURCES INVESTIGATIONS REPORT 87-4178
PLATE 9



WESTERN LIMIT OF PEEDEE AQUIFER
-100
-200
-300
-400
-500
-600
0
+50
Tarboro
Bethel
Conetoe
Stokes
Leggets Crossroads
Washington
Bunyan
Bath
Pactolus
Grimesland
Chocowinity
Bonnerton
Edward
Coxs Crossroads
Old Sparta
Pinetops
Mercer
Falkland
Greenville
Simpson
Black Jack
Hollywood Crossroads
Macclesfield
Fountain
Bell Arthur
Winterville
Chicod
Calico
Farmville
Ayden
Vanceboro
Aurora
Askin
Elm City
Rosebud
Holdens Crossroads
Saratoga
Walstonburg
Wilson
Maury
Ormondsville
Grifton
Quinerly
Fort Barnwell
Bridgeton
New Bern
Stantonsburg
Black Creek
Hookerton
Lucama
Eureka
Snow Hill
Cove City
Tuscarora
Clarks
River Bend
Fremont
Albia
Dover
Kinston
Institute
Pikeville
Jason
Falling Creek
LaGrange
Trenton
Pollocksville
Nahunta
Phillips Crossroads
Elm Grove
Woodington
Walnut Creek
Goldsboro
Maysville
Sandy Bottom
Seven Springs
Strabane
Deep Run
Jonestown
Comfort
Cliffs of the Neuse State Park
Taylors Corner
PITT COUNTY
GREENE COUNTY
LENOIR COUNTY
CRAVEN COUNTY
JONES COUNTY
BEAUFORT COUNTY
EDGECOMBE COUNTY
WILSON COUNTY
WAYNE COUNTY
DUPLIN COUNTY
ONSLOW COUNTY
MARTIN COUNTY
PAMLICO COUNTY
NEUSE RIVER
PAMLICO RIVER
TAR RIVER

Base adapted from North Carolina Department of Transportation county highway maps.

0 2 4 6 8 10 MILES
0 2 4 6 8 10 KILOMETERS

INTERIOR-- GEOLOGICAL SURVEY, RALEIGH, N.C. 1988

EXPLANATION

— -100 — STRUCTURE CONTOUR-- Shows altitude of top of Peedee aquifer. Contour intervals 50 and 100 feet. Datum is sea level

······ LINE OF EQUAL CHLORIDE CONCENTRATION-- Shows approximately where water at the top of the Peedee aquifer contains 250 milligrams per liter chloride

– – – – LINE OF EQUAL CHLORIDE CONCENTRATION-- Shows approximately where water at the bottom of the Peedee aquifer contains 250 milligrams per liter chloride

▨ TRANSITION ZONE FROM FRESHWATER TO SALTWATER IN THE PEEDEE AQUIFER

10● WELL SITE AND NUMBER

Prepared in cooperation with--

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENOIR WATER CORPORATION

ALTITUDE OF THE TOP OF THE PEEDEE AQUIFER

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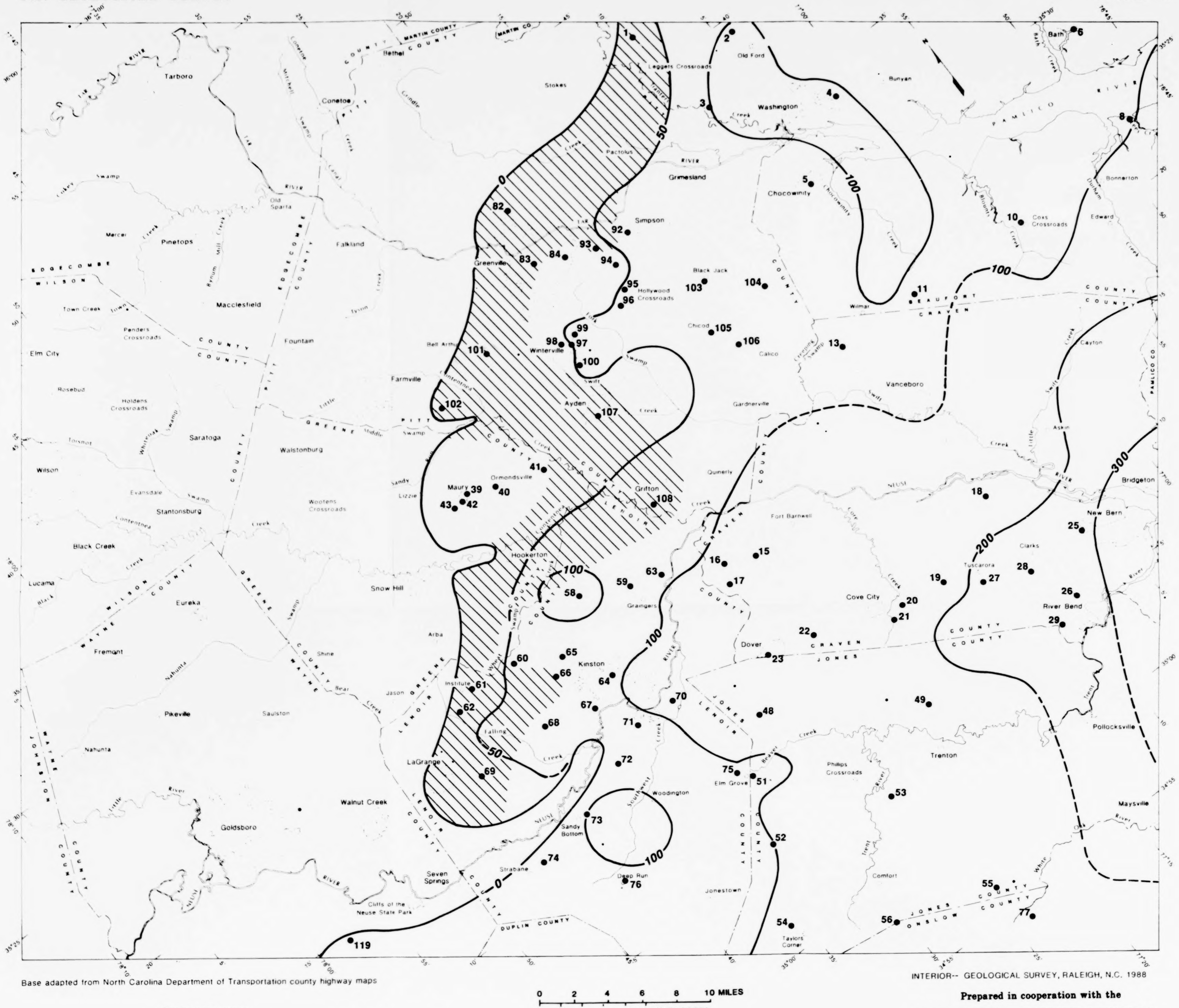
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY


0
50
100
200
300
Tarboro
Bethel
Conetoe
Stokes
Leggets Crossroads
Old Ford
Washington
Bunyan
Bath
Pactolus
Grimesland
Chocowinity
Bonnerton
Coxs Crossroads
Edward
Old Sparta
Pinetops
Falkland
Greenville
Simpson
Black Jack
Hollywood Crossroads
Macclesfield
Fountain
Bell Arthur
Winterville
Chicod
Calico
Wimar
Vanceboro
Cayton
Elm City
Farmville
Ayden
Gardnerville
Saratoga
Walstonburg
Wilson
Ormondsville
Maury
Grifton
Quinerly
Fort Barnwell
Bridgeton
New Bern
Stantonsburg
Wootens Crossroads
Black Creek
Hookerton
Snow Hill
Lucama
Eureka
Graingers
Cove City
Tuscarora
Clarks
River Bend
Fremont
Kinston
Dover
Institute
Jason
Pikeville
Saulston
Nahunta
Trenton
Pollocksville
LaGrange
Falling
Phillips Crossroads
Woodington
Elm Grove
Walnut Creek
Goldsboro
Sandy Bottom
Seven Springs
Strabane
Deep Run
Jonestown
Comfort
Maysville
Cliffs of the Neuse State Park
Taylors Corner
NEUSE RIVER
PAMLICO RIVER
EDGECOMBE COUNTY
WILSON COUNTY
PITT COUNTY
GREENE COUNTY
LENOIR COUNTY
WAYNE COUNTY
JOHNSTON COUNTY
DUPLIN COUNTY
JONES COUNTY
ONSLOW COUNTY
CRAVEN COUNTY
BEAUFORT COUNTY
MARTIN COUNTY
PAMLICO CO.
0 2 4 6 8 10 MILES
0 2 4 6 8 10 KILOMETERS

Base adapted from North Carolina Department of Transportation county highway maps

INTERIOR-- GEOLOGICAL SURVEY, RALEIGH, N.C. 1988

EXPLANATION

—100— — — LINE OF EQUAL THICKNESS OF PEEDEE AQUIFER -- Dashed where approximately located. Intervals 50 and 100 feet

23● WELL SITE AND NUMBER

▨ AREA WHERE PERMEABLE MATERIAL IN UNIT IS ESTIMATED TO EXCEED 75 PERCENT

Prepared in cooperation with the

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENOIR WATER CORPORATION

THICKNESS AND PERCENTAGE OF PERMEABLE MATERIAL IN THE PEEDEE AQUIFER

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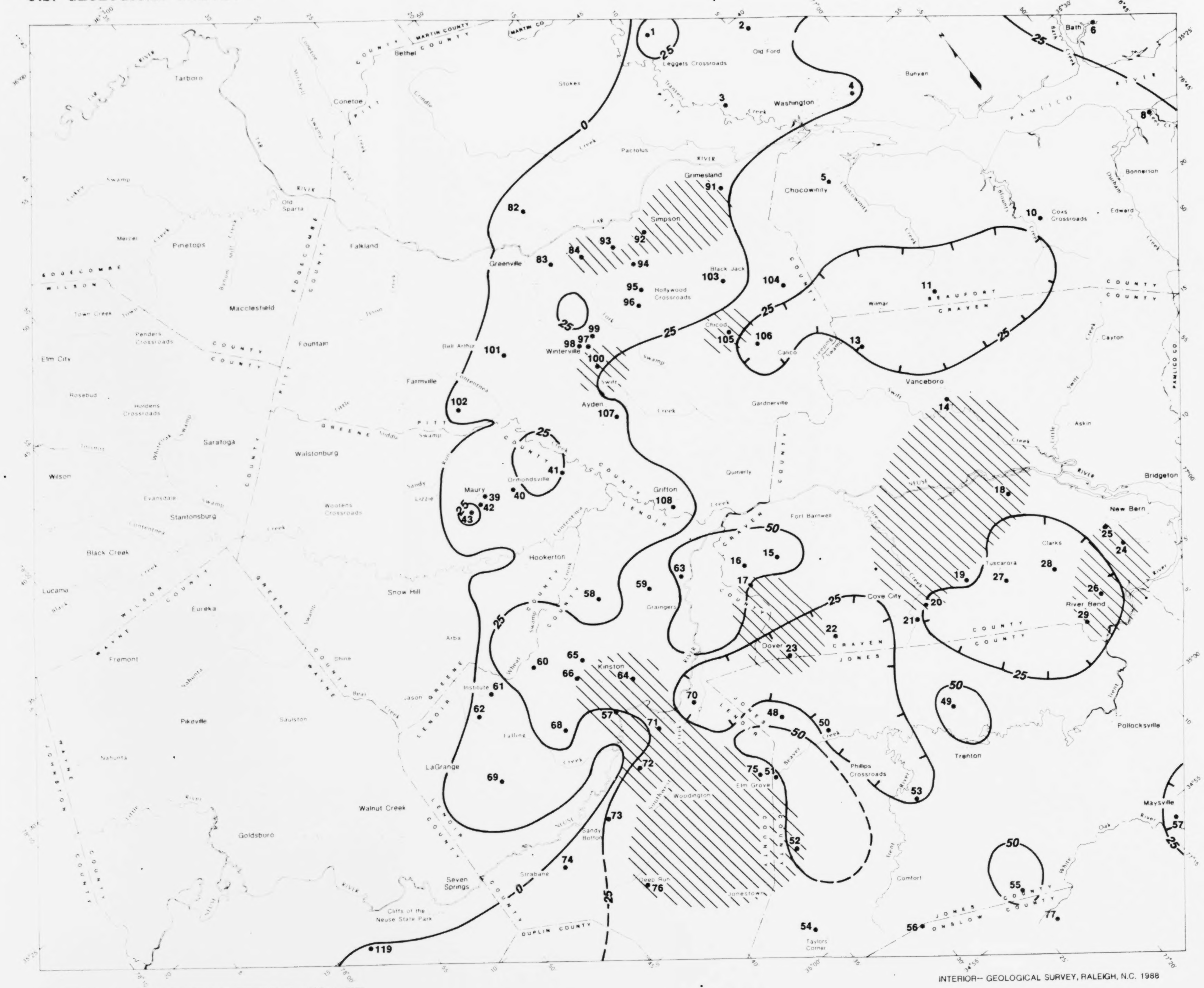
U.S. GEOLOGICAL SURVEY

WATER-RESOURCES INVESTIGATIONS REPORT 87-4178
PLATE 11



Tarboro
Bethel
Conetoe
MARTIN COUNTY
Stokes
Leggets Crossroads
Old Ford
Washington
Bunyan
Bath
PAMLICO RIVER
Parmele
Pactolus
Grimesland
Chocowinity
Bonnerton
Coxs Crossroads
Edward
Old Sparta
Pinetops
Falkland
Greenville
Simpson
Black Jack
Hollywood Crossroads
Macclesfield
Fountain
Wilmar
BEAUFORT COUNTY
CRAVEN COUNTY
Chocowinity
Calico
Vanceboro
Cayton
Elm City
Bell Arthur
Winterville
Farmville
Ayden
Gardnerville
Saratoga
Walstonburg
Askin
Wilson
Bridgeton
Quinerly
Grifton
Ormondsville
Maury
Stantonsburg
Lizzie
Fort Barnwell
New Bern
Black Creek
Hookerton
Snow Hill
Tuscarora
Clarks
River Bend
Lucama
Eureka
Graingers
Cove City
Dover
Fremont
Arba
Kinston
Institute
Pikeville
Falling
Trenton
Pollocksville
LaGrange
Phillips Crossroads
Woodington
Elm Grove
Walnut Creek
Goldsboro
Sandy Bottom
Maysville
Seven Springs
Cliffs of the Neuse State Park
Deep Run
Jonestown
Comfort
Taylors Corner
DUPLIN COUNTY
JONES COUNTY
ONSLOW COUNTY
0
25
50
1 2 3 4 5 6 8 10 11 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 39 40 41 42 43 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 68 69 70 71 72 73 74 75 76 77 82 83 84 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 119
Base adapted from North Carolina Department of Transportation county highway maps
0 2 4 6 8 10 MILES
0 2 4 6 8 10 KILOMETERS

INTERIOR—GEOLOGICAL SURVEY, RALEIGH, N.C. 1988

EXPLANATION

—25— — — LINE OF EQUAL THICKNESS OF PEEDEE CONFINING UNIT - - Dashed where approximately located. Hachured to indicate where unit is thinner than surrounding area. Interval 25 feet

69• WELL SITE AND NUMBER

▨ AREA WHERE PERMEABLE MATERIAL IN UNIT IS ESTIMATED TO EXCEED 20 PERCENT

Prepared in cooperation with the

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENOIR WATER CORPORATION

THICKNESS AND PERCENTAGE OF PERMEABLE MATERIAL IN THE PEEDEE CONFINING UNIT

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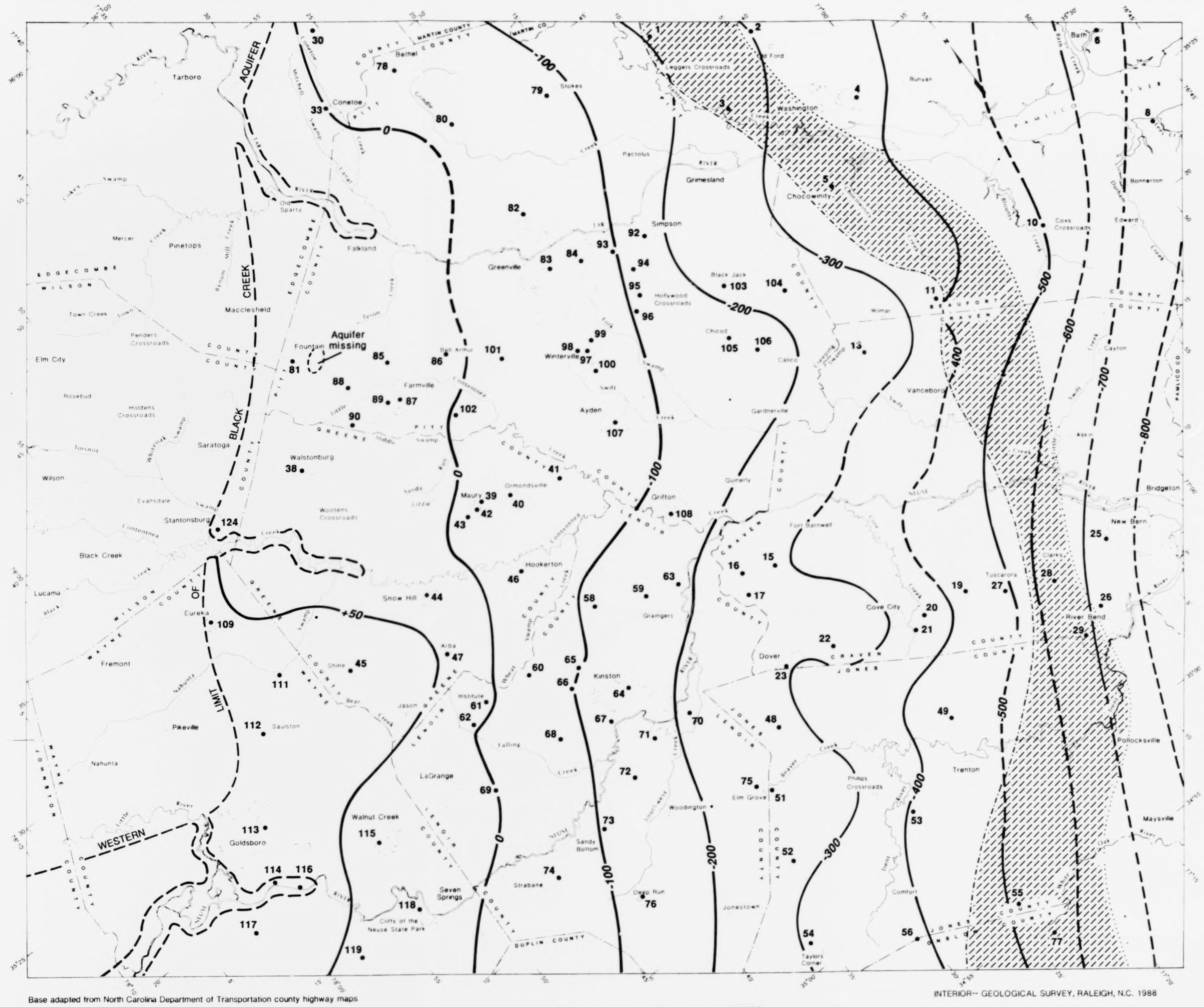
U.S. GEOLOGICAL SURVEY

WATER-RESOURCES INVESTIGATIONS REPORT 87-4178
PLATE 12


Tarboro
Conetoe
Bethel
Stokes
Leggets Crossroads
Washington
Pactolus
Grimesland
Chocowinity
Simpson
Greenville
Black Jack
Hollywood Crossroads
Winterville
Pinetops
Macclesfield
Fountain
Aquifer missing
Falkland
Farmville
Bell Arthur
Ayden
Chicod
Vanceboro
Grifton
Walstonburg
Saratoga
Stantonsburg
Wilson
Elm City
Black Creek
Lucama
Eureka
Fremont
Pikeville
Goldsboro
Snow Hill
Hookerton
Maury
Ormondsville
Kinston
Dover
Cove City
Fort Barnwell
Bridgeton
New Bern
River Bend
Pollocksville
Trenton
Maysville
LaGrange
Walnut Creek
Seven Springs
Cliffs of the Neuse State Park
Deep Run
Jonestown
Comfort
Taylors Corner
Bath
Bonnerton
Cayton
Tuscarora
MARTIN COUNTY
PITT COUNTY
BEAUFORT COUNTY
EDGECOMBE COUNTY
WILSON COUNTY
GREENE COUNTY
WAYNE COUNTY
LENOIR COUNTY
CRAVEN COUNTY
JONES COUNTY
DUPLIN COUNTY
PAMLICO COUNTY
WESTERN LIMIT OF BLACK CREEK AQUIFER
0
+50
-100
-200
-300
-400
-500
-600
-700
-800
35°25'
35°30'
77°00'
78°00'
78°10'

Base adapted from North Carolina Department of Transportation county highway maps

INTERIOR-- GEOLOGICAL SURVEY, RALEIGH, N.C. 1988

0 2 4 6 8 10 MILES
0 2 4 6 8 10 KILOMETERS

Prepared in cooperation with the

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENIOR WATER CORPORATION

EXPLANATION

—-100--- STRUCTURE CONTOUR - - Shows altitude of top of Black Creek aquifer. Dashed where approximately located. Contour intervals 50 and 100 feet. Datum is sea level

.... LINE OF EQUAL CHLORIDE CONCENTRATION - - Shows approximately where water at the top of the Black Creek aquifer contains 250 milligrams per liter chloride

-·-·-·-·- LINE OF EQUAL CHLORIDE CONCENTRATION - - Shows approximately where water at the bottom of the Black Creek aquifer contains 250 milligrams per liter chloride

▨ TRANSITION ZONE FROM FRESHWATER TO SALTWATER IN THE BLACK CREEK AQUIFER

10● WELL AND SITE NUMBER

ALTITUDE OF THE TOP OF THE BLACK CREEK AQUIFER

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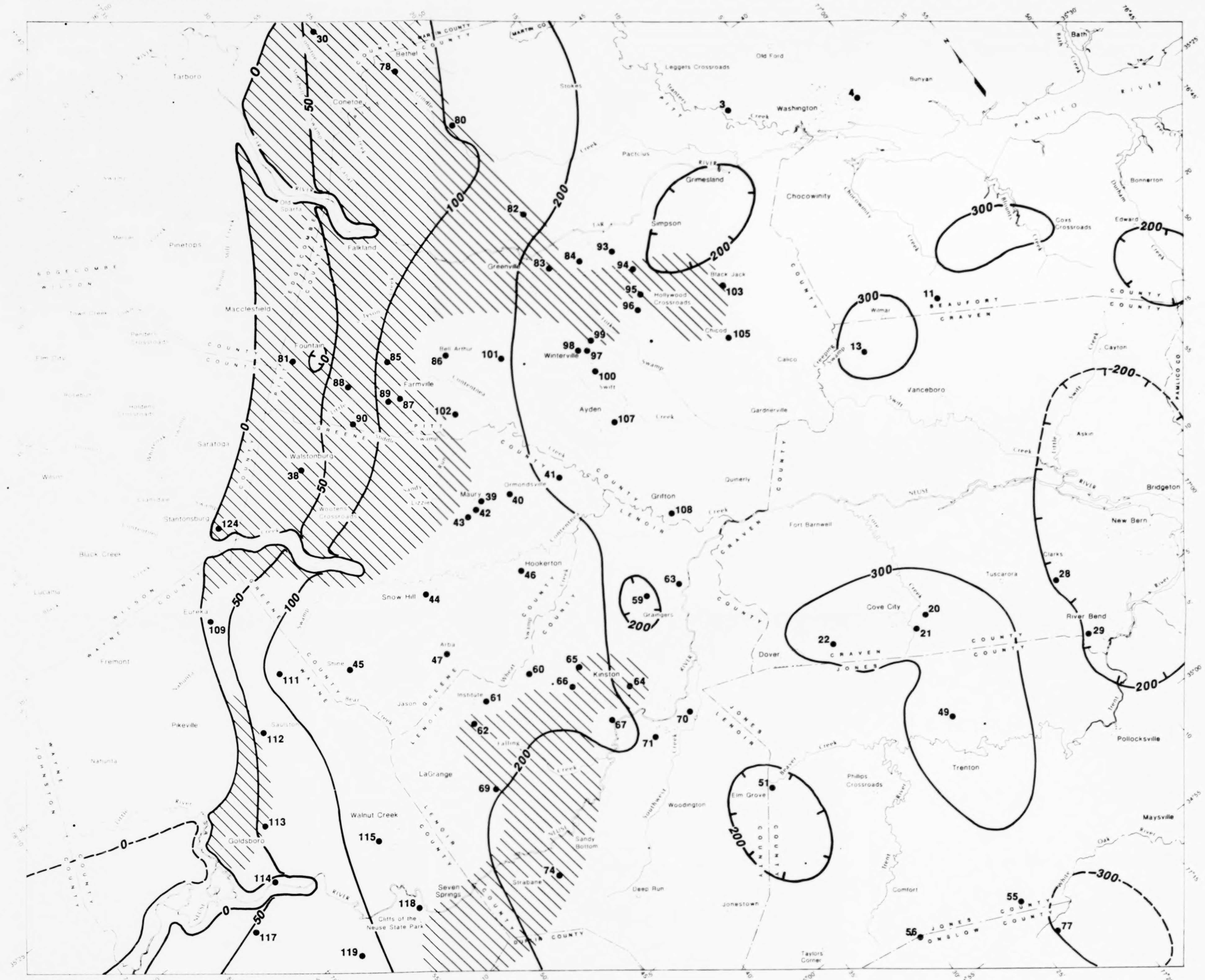
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

WATER-RESOURCES INVESTIGATIONS REPORT 87-4178
PLATE 13



Tarboro
Bethel
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Greenville
Winterville
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Walstonburg
Saratoga
Stantonsburg
Black Creek
Eureka
Fremont
Pikeville
Goldsboro
Snow Hill
Hookerton
Maury
Ormondsville
Grifton
Kinston
LaGrange
Walnut Creek
Seven Springs
Cliffs of the Neuse State Park
Deep Run
Jonestown
Woodington
Dover
Cove City
Tuscarora
Fort Barnwell
Vanceboro
New Bern
River Bend
Pollocksville
Trenton
Maysville
Comfort
Washington
Chocowinity
Grimesland
Simpson
Bath
Bridgeton
Old Ford
Leggetts Crossroads
PAMLICO RIVER
NEUSE RIVER
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50
100
200
300

Base adapted from North Carolina Department of Transportation county highway maps

INTERIOR-- GEOLOGICAL SURVEY, RALEIGH, N.C. 1988

0 2 4 6 8 10 MILES
0 2 4 6 8 10 KILOMETERS

EXPLANATION

— 100 — — LINE OF EQUAL THICKNESS OF BLACK CREEK AQUIFER -- Dashed where approximately located. Hachured to indicate where unit is thinner than surrounding area. Intervals 50 and 100 feet

22● WELL SITE AND NUMBER

▨ AREA WHERE PERMEABLE MATERIAL IN UNIT IS ESTIMATED TO EXCEED 50 PERCENT

Prepared in cooperation with the

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENIOR WATER CORPORATION

THICKNESS AND PERCENTAGE OF PERMEABLE MATERIAL IN THE BLACK CREEK AQUIFER

I 19. 42/4:

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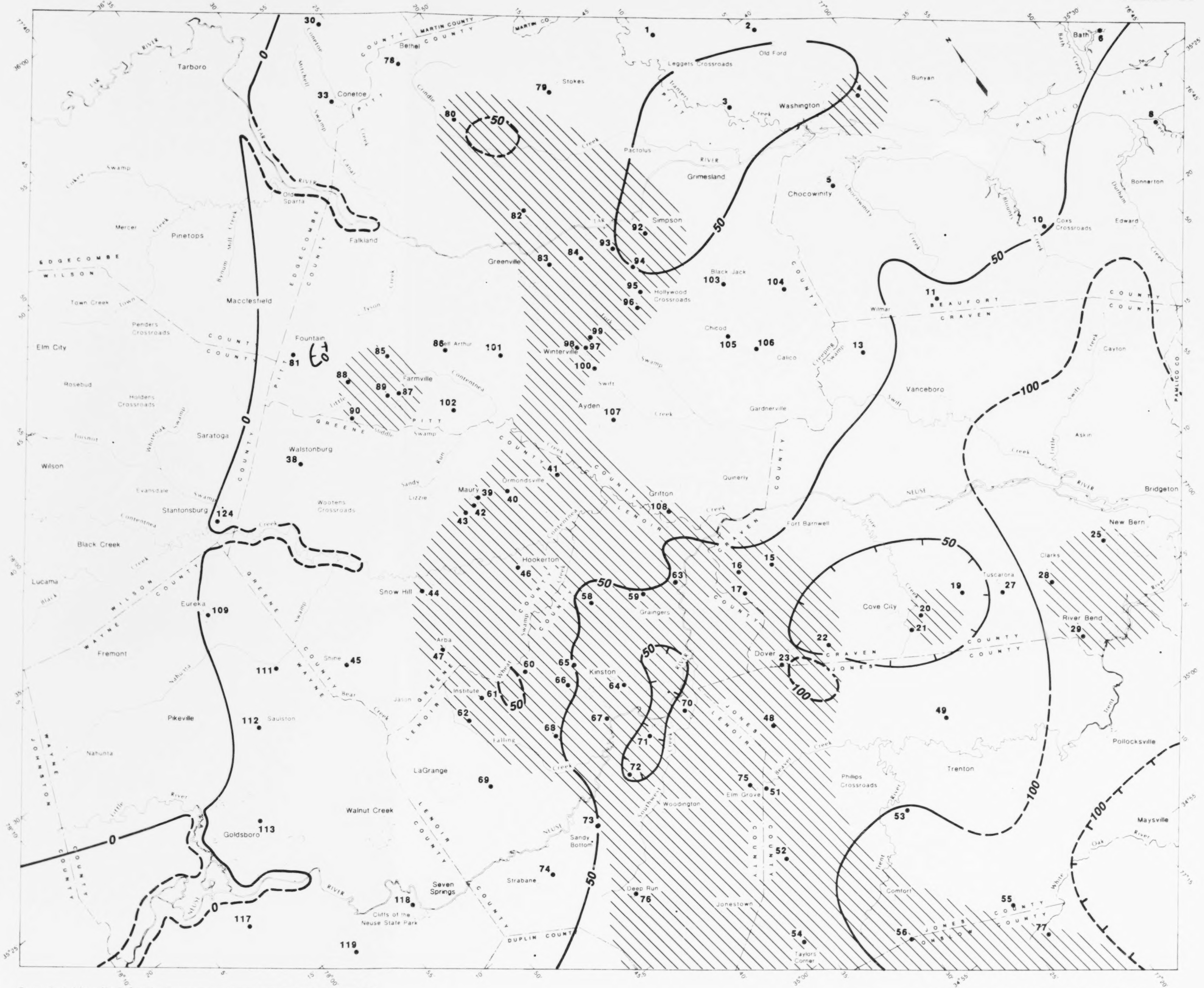
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

WATER-RESOURCES INVESTIGATIONS REPORT 87-4178
PLATE 14



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Penders Crossroads
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Farmville
Rosebud
Holdens Crossroads
Saratoga
Wilson
Walstonburg
Stantonsburg
Black Creek
Lucama
Eureka
Fremont
Pikeville
Nahunta
Goldsboro
Walnut Creek
Seven Springs
Cliffs of the Neuse State Park
Greenville
Winterville
Ayden
Grifton
Ormondsville
Maury
Hookerton
Snow Hill
Shine
Saulston
Arba
Institute
Falling Creek
LaGrange
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Graingers
Sandy Bottom
Strabane
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Jonestown
Taylors Corner
Leggers Crossroads
Old Ford
Washington
Pactolus
Grimesland
Simpson
Chocowinity
Black Jack
Hollywood Crossroads
Chicod
Calico
Gardnerville
Quinerry
Fort Barnwell
Cove City
Dover
Tuscarora
Clarks
New Bern
River Bend
Bridgeton
Vanceboro
Wilmar
Askin
Cayton
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Cox Crossroads
Phillips Crossroads
Elm Grove
Trenton
Comfort
Pollocksville
Maysville
PAMLICO RIVER
NEUSE RIVER
EDGECOMBE COUNTY
WILSON COUNTY
PITT COUNTY
GREENE COUNTY
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BEAUFORT COUNTY
CRAVEN COUNTY
LENOIR COUNTY
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WAYNE COUNTY
DUPLIN COUNTY
ONSLOW COUNTY
JOHNSTON COUNTY
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Base adapted from North Carolina Department of Transportation county highway maps

INTERIOR-- GEOLOGICAL SURVEY, RALEIGH, N.C. 1988

0 2 4 6 8 10 MILES
0 2 4 6 8 10 KILOMETERS

EXPLANATION

—100— — LINE OF EQUAL THICKNESS OF BLACK CREEK CONFINING UNIT-- Dashed where approximately located. Hachured to indicate where unit is thinner than surrounding area. Interval 50 feet

49• WELL SITE AND NUMBER

▨ AREA WHERE PERMEABLE MATERIAL IN UNIT IS ESTIMATED TO EXCEED 20 PERCENT

Prepared in cooperation with the

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENIOR WATER CORPORATION

THICKNESS AND PERCENTAGE OF PERMEABLE MATERIAL IN THE BLACK CREEK CONFINING UNIT

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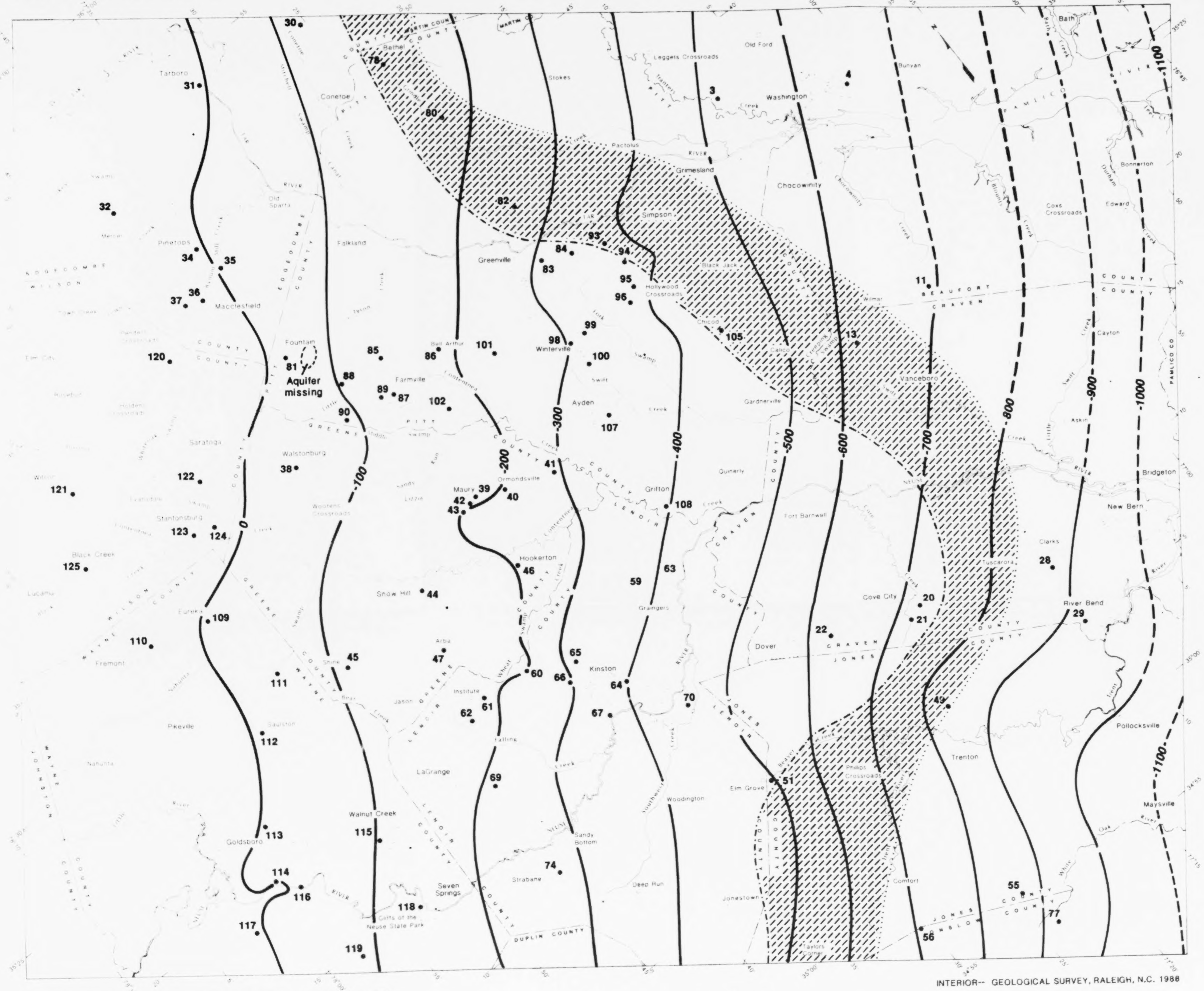
U.S. GEOLOGICAL SURVEY

WATER-RESOURCES INVESTIGATIONS REPORT 87-4178
PLATE 15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Tarboro
Conetoe
Bethel
MARTIN COUNTY
Stokes
Leggets Crossroads
Old Ford
Washington
Bath
Pactolus
Grimesland
Chocowinity
Simpson
Greenville
Falkland
Pinetops
Macclesfield
Fountain
Aquifer missing
Farmville
Bell Arthur
Winterville
Ayden
Walstonburg
Saratoga
Wilson
Stantonsburg
Black Creek
Eureka
Fremont
Pikeville
Goldsboro
Snow Hill
Maury
Ormondsville
Hookerton
Grifton
Kinston
Vanceboro
Cove City
Dover
Trenton
New Bern
River Bend
Bridgeton
Pollocksville
Maysville
BEAUFORT COUNTY
CRAVEN COUNTY
JONES COUNTY
ONSLOW COUNTY
LENOIR COUNTY
DUPLIN COUNTY
GREENE COUNTY
PITT COUNTY
Jonestown
Taylors Corner
Comfort
Deep Run
Sandy Bottom
Strabane
Seven Springs
Cliffs of the Neuse State Park
Walnut Creek
LaGrange
Institute
Jason
Woodington
Elm Grove
Fort Barnwell
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56
77

Base adapted from North Carolina Department of Transportation county highway maps

0 2 4 6 8 10 MILES
0 2 4 6 8 10 KILOMETERS

INTERIOR-- GEOLOGICAL SURVEY, RALEIGH, N.C. 1988

EXPLANATION

—- *100* - - - STRUCTURE CONTOUR - - Shows altitude of top of upper Cape Fear aquifer. Dashed where approximately located. Contour interval 100 feet. Datum is sea level

.... LINE OF EQUAL CHLORIDE CONCENTRATION - - Shows approximately where water at the top of the upper Cape Fear aquifer contains 250 milligrams per liter chloride

-·-·-·-·-·- LINE OF EQUAL CHLORIDE CONCENTRATION - - Shows approximately where water at the bottom of the upper Cape Fear aquifer contains 250 milligrams per liter chloride

▨ TRANSITION ZONE FROM FRESHWATER TO SALTWATER IN THE UPPER CAPE FEAR AQUIFER

20● WELL AND SITE NUMBER

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GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENIOR WATER CORPORATION

ALTITUDE OF THE TOP OF THE UPPER CAPE FEAR AQUIFER

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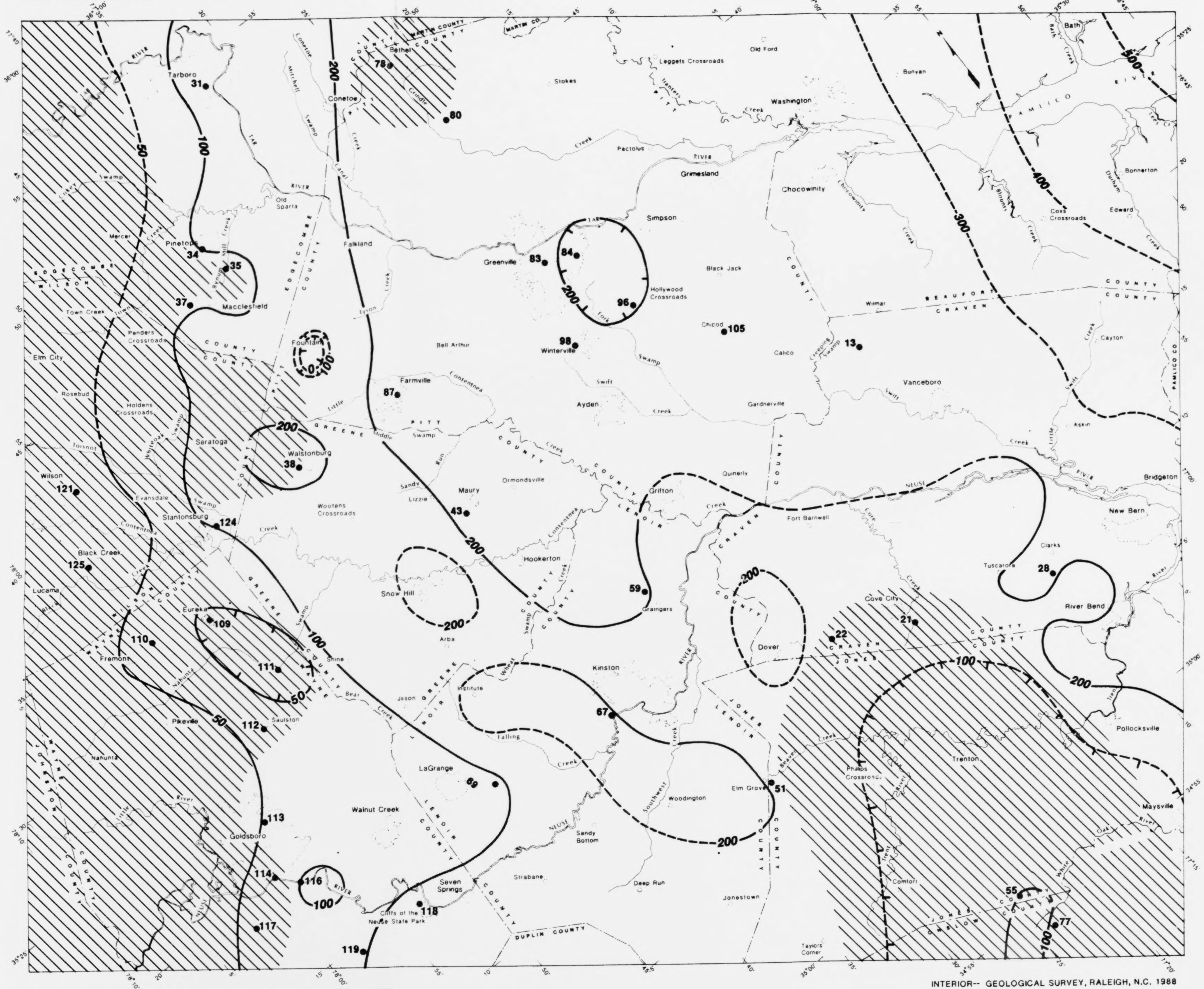
WATER-RESOURCES INVESTIGATIONS REPORT 87-4178
PLATE 16



Tarboro
31
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50
Pinetops
34
35
37
Macclesfield
Mercer
Town Creek
Penders Crossroads
Elm City
Rosebud
Holdens Crossroads
Saratoga
Wilson
121
Evansdale
Stantonsburg
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Black Creek
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Lucama
Eureka
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110
Fremont
111
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Pikeville
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Saulston
Nahunta
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Goldsboro
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119
Cliffs of the Neuse State Park
118
Seven Springs
Walnut Creek
LaGrange
69
Jason
Shine
Institute
Falling Creek
Snow Hill
Arba
200
Hookerton
Wootens Crossroads
Walstonburg
38
200
Fountain
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100
Old Sparta
Falkland
Conetoe
Bethel
78
80
200
Stokes
Bell Arthur
Farmville
87
Maury
43
Lizzie
Ormondsville
Greenville
83
84
96
200
Winterville
98
Ayden
Hollywood Crossroads
Chicod
105
Black Jack
Simpson
Grimesland
Pactolus
Leggets Crossroads
Old Ford
Washington
Chocowinity
Calico
13
Gardnerville
Wilmar
Vanceboro
Bunyan
300
400
500
Bath
Bonnerton
Edward
Coxs Crossroads
Cayton
Askin
Bridgeton
New Bern
Clarks
Tuscarora
28
River Bend
200
Pollocksville
Maysville
Trenton
100
Phillips Crossroads
Comfort
55
77
100
Cove City
21
22
Dover
200
Fort Barnwell
Quinerly
Grifton
59
Graingers
Kinston
67
Elm Grove
51
200
Woodington
Sandy Bottom
Strabane
Deep Run
Jonestown
Taylors Corner
EDGECOMBE COUNTY
WILSON COUNTY
PITT COUNTY
GREENE COUNTY
WAYNE COUNTY
JOHNSTON COUNTY
LENOIR COUNTY
DUPLIN COUNTY
JONES COUNTY
CRAVEN COUNTY
BEAUFORT COUNTY
MARTIN CO.
PAMLICO CO.
ONSLOW COUNTY
TAR RIVER
PAMLICO RIVER
NEUSE RIVER
Contentnea Creek
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77°40'
36°00'
35°25'
78°10'
78°00'
77°00'
76°45'
35°30'
35°00'
34°55'
77°15'
77°20'

Base adapted from North Carolina Department of Transportation county highway maps

0 2 4 6 8 10 MILES
0 2 4 6 8 10 KILOMETERS

INTERIOR-- GEOLOGICAL SURVEY, RALEIGH, N.C. 1988

Prepared in cooperation with the

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GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENOIR WATER CORPORATION

EXPLANATION

—100— — —	LINE OF EQUAL THICKNESS OF UPPER CAPE FEAR AQUIFER -- Dashed where approximately located. Hachured to indicate where unit is thinner than surrounding area. Intervals 50 and 100 feet
22●	WELL SITE AND NUMBER
▨	AREA WHERE PERMEABLE MATERIAL IN UNIT IS ESTIMATED TO EXCEED 60 PERCENT

THICKNESS AND PERCENTAGE OF PERMEABLE MATERIAL IN THE UPPER CAPE FEAR AQUIFER

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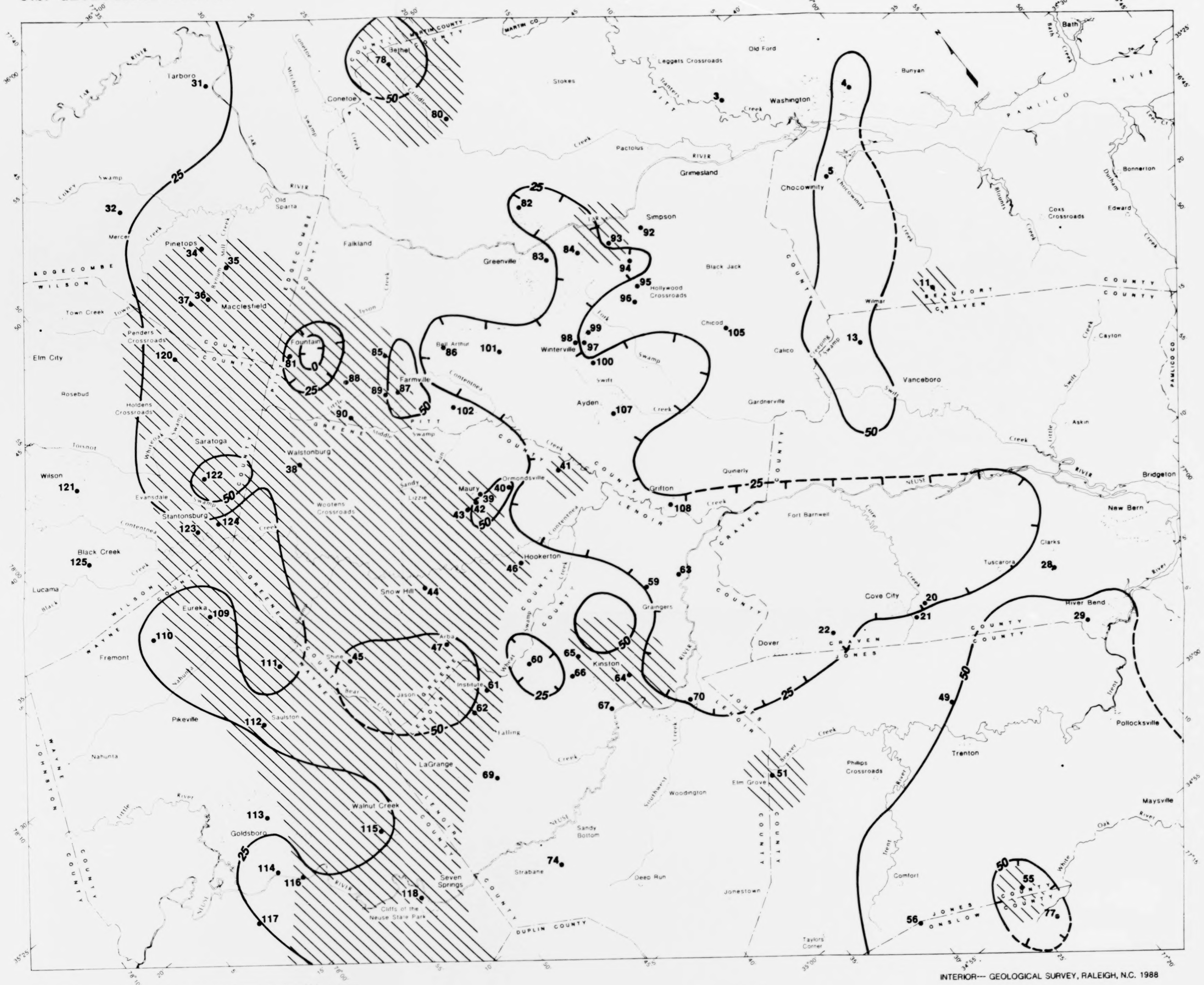
U.S. GEOLOGICAL SURVEY

WATER-RESOURCES INVESTIGATIONS REPORT 87-4178
PLATE 17



Tarboro
Bethel
Conetoe
Stokes
Leggets Crossroads
Old Ford
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Bunyan
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PAMLICO RIVER
Pactolus
Grimesland
Old Sparta
Falkland
Pinetops
Mercer
Macclesfield
Simpson
Chocowinity
Black Jack
Hollywood Crossroads
Greenville
Winterville
Chicod
Calico
Bonnerton
Coxs Crossroads
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Bell Arthur
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Gardnerville
Vanceboro
Cayton
Askin
Elm City
Rosebud
Town Creek
Penders Crossroads
Holdens Crossroads
Saratoga
Walstonburg
Wilson
Stantonsburg
Evansdale
Wootens Crossroads
Ormondsville
Maury
Grifton
Quinerly
Fort Barnwell
Bridgeton
New Bern
Black Creek
Lucama
Hookerton
Snow Hill
Cove City
Tuscarora
Clarks
River Bend
Eureka
Fremont
Grainger
Dover
Kinston
Institute
Pikeville
Nahunta
Falling Creek
LaGrange
Phillips Crossroads
Trenton
Pollocksville
Elm Grove
Woodington
Goldsboro
Walnut Creek
Sandy Bottom
Seven Springs
Maysville
Cliffs of the Neuse State Park
Strabane
Deep Run
Jonestown
Comfort
Taylors Corner
DUPLIN COUNTY
JONES
ONSLOW
25
50

Base adapted from North Carolina Department of Transportation county highway maps.

0 2 4 6 8 10 MILES
0 2 4 6 8 10 KILOMETERS

INTERIOR--- GEOLOGICAL SURVEY, RALEIGH, N.C. 1988

EXPLANATION

—100— — LINE OF EQUAL THICKNESS OF UPPER CAPE FEAR CONFINING UNIT - - Dashed where approximately located. Hachured to indicate where unit is thinner than surrounding area. Interval 25 feet

22• WELL SITE AND NUMBER

▨ AREA WHERE PERMEABLE MATERIAL IN UNIT IS ESTIMATED TO EXCEED 20 PERCENT

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GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENOIR WATER CORPPORATION

THICKNESS AND PERCENTAGE OF PERMEABLE MATERIAL IN THE UPPER CAPE FEAR CONFINING UNIT

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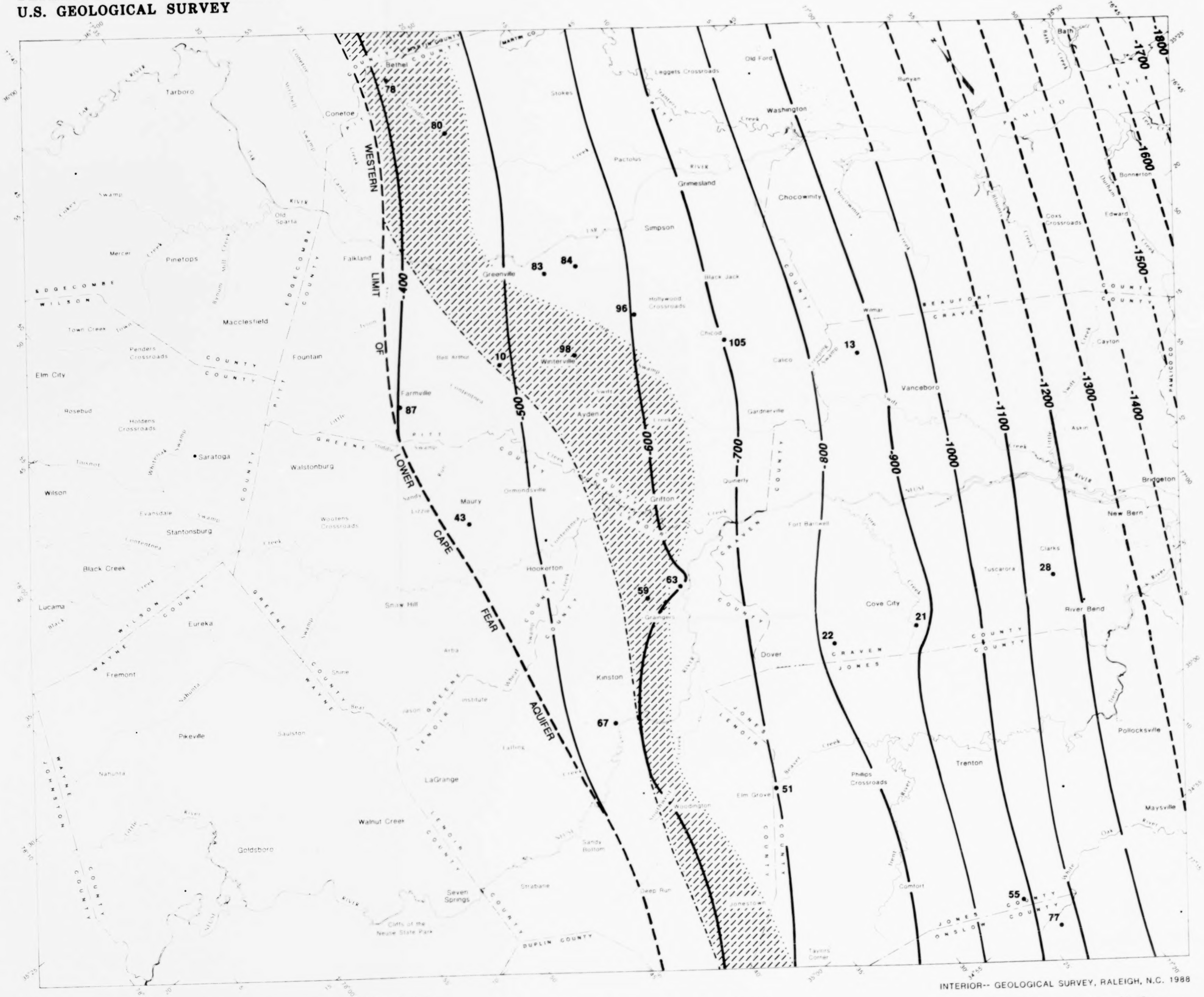
U.S. GEOLOGICAL SURVEY

WATER-RESOURCES INVESTIGATIONS REPORT 87-4178
PLATE 18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WESTERN LIMIT OF LOWER CAPE FEAR AQUIFER
Tarboro
Conetoe
Bethel
Old Sparta
Pinetops
Falkland
Macclesfield
Fountain
Elm City
Farmville
Saratoga
Walstonburg
Wilson
Stantonsburg
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Cliffs of the Neuse State Park
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Leggets Crossroads
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INTERIOR-- GEOLOGICAL SURVEY, RALEIGH, N.C. 1988

Base adapted from North Carolina Department of Transportation county highway maps

0 2 4 6 8 10 MILES
0 2 4 6 8 10 KILOMETERS

Prepared in cooperation with the

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENOIR WATER CORPORATION

EXPLANATION

—-400---	STRUCTURE CONTOUR - - Shows altitude of top of lower Cape Fear aquifer. Dashed where approximately located. Contour interval 100 feet. Datum is sea level
....	LINE OF EQUAL CHLORIDE CONCENTRATION - - Shows approximately where water at the top of the lower Cape Fear aquifer contains 250 milligrams per liter chloride
-.-.-.-.-	LINE OF EQUAL CHLORIDE CONCENTRATION - - Shows approximately where water at the bottom of the lower Cape Fear aquifer contains 250 milligrams per liter chloride
▨	TRANSITION ZONE FROM FRESHWATER TO SALTWATER IN THE LOWER CAPE FEAR AQUIFER
13●	WELL AND SITE NUMBER

ALTITUDE OF THE TOP OF THE LOWER CAPE FEAR AQUIFER

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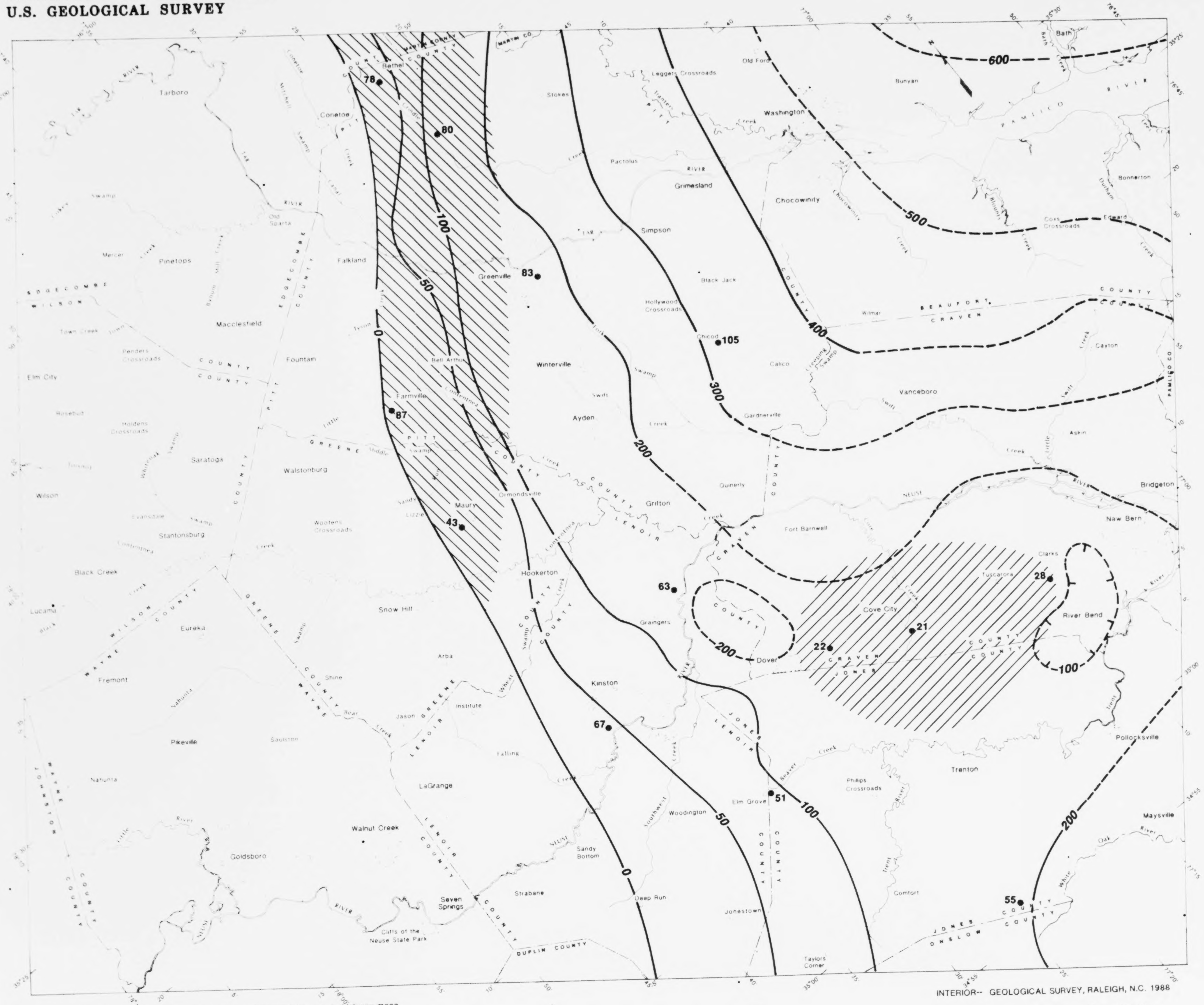
U.S. GEOLOGICAL SURVEY

WATER-RESOURCES INVESTIGATIONS REPORT 87-4178
PLATE 19



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Tarboro
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Conetoe
Old Sparta
Pinetops
Mercer
Macclesfield
Falkland
Fountain
Elm City
Wilson
Saratoga
Walstonburg
Stantonsburg
Black Creek
Lucama
Eureka
Fremont
Pikeville
Nahunta
Goldsboro
Snow Hill
Arba
Shine
Jason
Institute
Falling
LaGrange
Walnut Creek
Seven Springs
Cliffs of the Neuse State Park
Strabane
Sandy Bottom
Deep Run
Woodington
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Hookerton
Maury
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Farmville
Bell Arthur
Greenville
Winterville
Ayden
Grifton
Ormondsville
Stokes
Pactolus
Grimesland
Simpson
Black Jack
Hollywood Crossroads
Chicod
Leggetts Crossroads
Old Ford
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Chocowinity
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Taylors Corner
PAMLICO RIVER
NEUSE RIVER
PITT COUNTY
GREENE COUNTY
LENOIR COUNTY
CRAVEN COUNTY
JONES COUNTY
BEAUFORT COUNTY
EDGECOMBE COUNTY
WILSON COUNTY
WAYNE COUNTY
DUPLIN COUNTY
ONSLOW COUNTY
MARTIN CO.
PAMLICO CO.
35°25'
35°00'
34°55'
77°20'
78°00'

INTERIOR-- GEOLOGICAL SURVEY, RALEIGH, N.C. 1988

Base adapted from North Carolina Department of Transportation county highway maps

0 2 4 6 8 10 MILES
0 2 4 6 8 10 KILOMETERS

EXPLANATION

—100— — LINE OF EQUAL THICKNESS OF LOWER CAPE FEAR AQUIFER -- Dashed where approximately located. Hachured to indicate where unit is thinner than surrounding area. Intervals 50 and 100 feet

22● WELL SITE AND NUMBER

⧵⧵⧵ AREA WHERE PERMEABLE MATERIAL IN UNIT IS ESTIMATED TO EXCEED 60 PERCENT

/// AREA WHERE PERMEABLE MATERIAL IN UNIT IS ESTIMATED TO BE LESS THAN 50 PERCENT

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CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENOIR WATER CORPORATION

THICKNESS AND PERCENTAGE OF PERMEABLE MATERIAL IN THE LOWER CAPE FEAR AQUIFER

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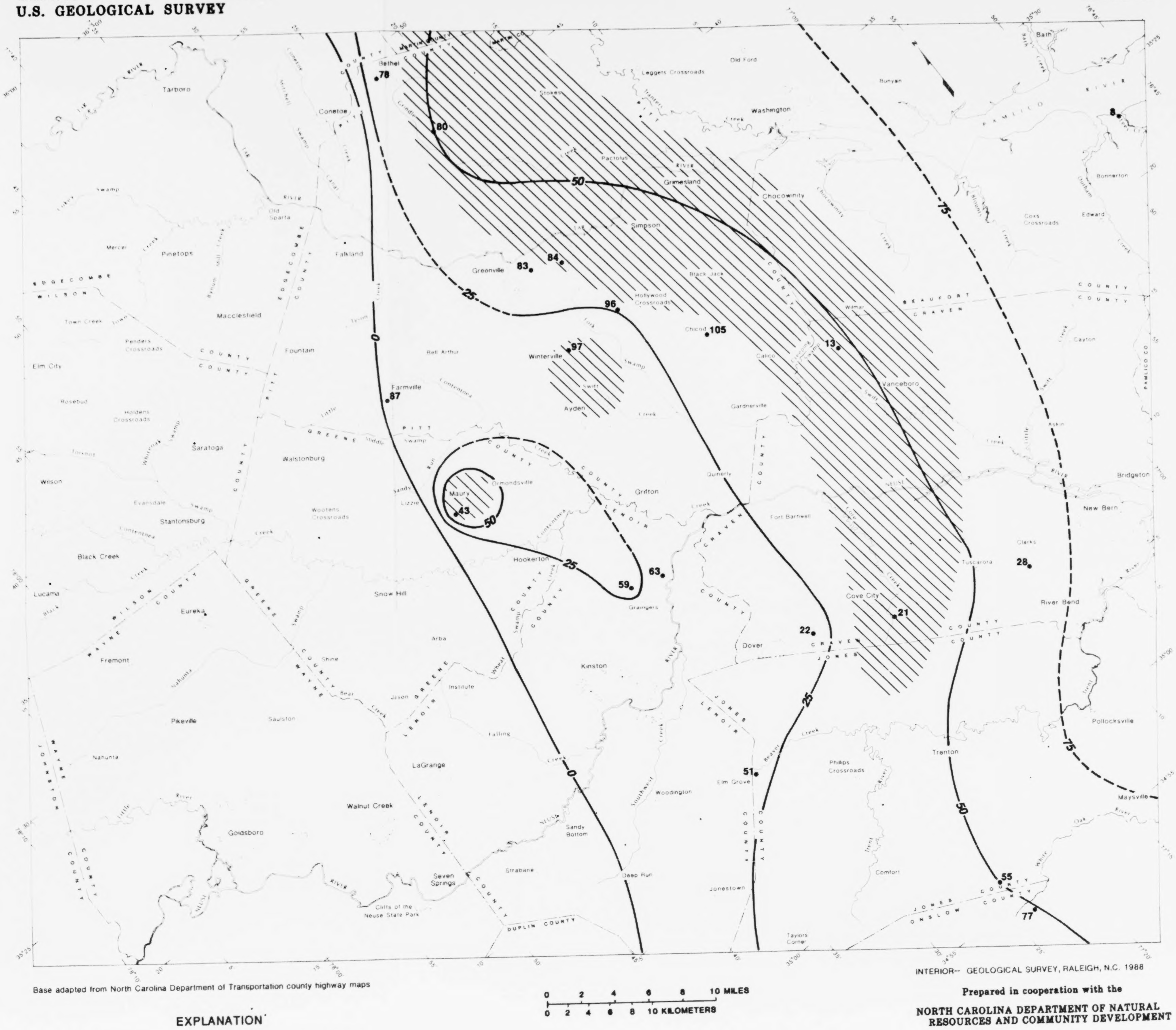
WATER-RESOURCES INVESTIGATIONS REPORT 87-4178
PLATE 20


Tarboro
Bethel
Conetoe
Washington
Leggets Crossroads
Old Ford
Runyan
Bath
Pamlico River
Stokes
Pactolus
Grimesland
Chocowinity
Simpson
Greenville
Falkland
Old Sparta
Pinetops
Mercer
Macclesfield
Fountain
Hollywood Crossroads
Black Jack
Chicod
Wilmar
Vanceboro
Bell Arthur
Winterville
Ayden
Farmville
Gardnerville
Elm City
Penders Crossroads
Rosebud
Holdens Crossroads
Saratoga
Walstonburg
Wilson
Stantonsburg
Black Creek
Lucama
Eureka
Fremont
Pikeville
Nahunta
Goldsboro
Ormondsville
Maury
Woolens Crossroads
Grifton
Hookerton
Snow Hill
Fort Barnwell
Tuscarora
Clarks
New Bern
Bridgeton
Cove City
River Bend
Dover
Kinston
Institute
Shine
Arba
Saulston
LaGrange
Falling Creek
Walnut Creek
Seven Springs
Cliffs of the Neuse State Park
Strabane
Sandy Bottom
Deep Run
Woodington
Elm Grove
Jonestown
Phillips Crossroads
Trenton
Comfort
Pollocksville
Maysville
Taylors Corner
Bonnerton
Edward
Coxs Crossroads
Cayton
Askin
Neuse River
EDGECOMBE COUNTY
WILSON COUNTY
PITT COUNTY
GREENE COUNTY
BEAUFORT COUNTY
CRAVEN COUNTY
PAMLICO CO.
WAYNE COUNTY
LENOIR COUNTY
JONES COUNTY
JOHNSTON COUNTY
DUPLIN COUNTY
ONSLOW COUNTY
0
25
50
75
78
80
83
84
96
97
105
13
87
43
59
63
22
21
28
8
51
55
77
0 2 4 6 8 10 MILES
0 2 4 6 8 10 KILOMETERS

Base adapted from North Carolina Department of Transportation county highway maps

INTERIOR-- GEOLOGICAL SURVEY, RALEIGH, N.C. 1988

EXPLANATION

—— 50 — — LINE OF EQUAL THICKNESS OF LOWER CAPE FEAR CONFINING UNIT - - Dashed where approximately located. Interval 25 feet

21● WELL SITE AND NUMBER

▨ AREA WHERE PERMEABLE MATERIAL IN UNIT IS ESTIMATED TO EXCEED 20 PERCENT

Prepared in cooperation with the

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
GREENE COUNTY
CITY OF KINSTON
CITY OF NEW BERN
TOWN OF AYDEN
TOWN OF FARMVILLE
TOWN OF LA GRANGE
TOWN OF PINETOPS
TOWN OF SNOW HILL
TOWN OF STANTONSBURG
GREENVILLE UTILITIES
NORTH LENOIR WATER CORPORATION

THICKNESS AND PERCENTAGE OF PERMEABLE MATERIAL IN THE LOWER CAPE FEAR CONFINING UNIT

I 19. 42/4:

best copy available